THE UNIVERSITY OF MICHIGAN CENTER FOR
SOUTH AND SOUTHEAST ASIAN STUDIES

ARYAN AND
NON-ARYAN
IN INDIA

edited by
Madhav M. Deshpande
and
Peter Edwin Hook

MICHIGAN PAPERS ON
SOUTH AND SOUTHEAST ASIA

No. 14, 1978

GENESIS OF ṚGVEDIC RETROFLEXION
A HISTORICAL AND SOCIOLINGUISTIC INVESTIGATION

Madhav M. Deshpande
The University of Michigan

The text of Ṛgveda, there is reason to suppose, is not quite the same as it was originally. Some Sūktas and Ṛks are found in the other Vedas, and there the readings in some cases are different. What the original readings were will have to be determined, if at all possible, by comparing the variation and taking a good many other facts into consideration. The way has been shown by Oldenberg, and it is quite open to any of us to follow it.

Sir R. G. Bhandarkar
Collected Works, vol. 1, p. 398

SUMMARY

1) A Perspective on the Problem;
2) Plurality of Ṛgvedic Recensions;
3) Recensional Variation: An Epistemological Problem;
4) *Aitareya-Āraṇyaka* (3.2.6): Its Implications;
5) Pre-Ṛgvedic Aryan-non-Aryan Bilingualism?;
6) Emergence of Retroflexion in Prehistoric Indo-Aryan;
7) *Brāhmīkaraṇa*: A Gradual Transformation;
8) Retroflexion and the Development of the Brāhmī Script;
9) Instability of Post-Vedic Retroflexion;
10) Irregular Retroflexion in the Vedic Recensions;
11) Retroflexion in the *Prātiśākhyas*;
12) Aspects of Dravidian Influence on Indo-Aryan;
13) Problems in the Reconstruction of the Ur-*Ṛgveda*;
14) Other Instances of Alleged Dravidian Influence;
15) Conclusions.

1. A PERSPECTIVE ON THE PROBLEM

1.1. Most modern scholars, if not all, accept that retroflex consonants already appear in the *Rgveda* and are seen increasingly in Middle Indo-Aryan. The question for most of these scholars is not whether there is retroflexion in the *Rgveda*, but how one is to explain its undisputed presence there. In this paper, I would like to deal with the prior question: Was there any retroflexion in the Ur-*Rgveda*? If there was no retroflexion in the Ur-*Rgveda*, how is it that the text of the *Rgveda* as we now have it has retroflexion? Before I deal with this question, however, it is important to survey existing views on the question of Rgvedic retroflexion.

For some, retroflexion is an independent "well-motivated" process that began in pre-Vedic Indo-Aryan. Others argue that retroflexion in Indo-Aryan is a result of contacts with Dravidians and/or Mundas, and that such influential contacts must have occurred in pre-Vedic times. Bloch (1965:325) says: "As to the distinction between dentals and cerebrals we have seen that it depends on the adaptation and crystallization of a series of alterations due at first to the action of the pre-historic Aryan *sh* sounds." But he does place a good deal of emphasis on the adaptational aspect of this phenomenon: "The Indo-Aryan innovation is best explained in terms of the use of the two classes in the indigenous languages. This is without doubt the most decisive fact in deciding the earliest Sanskrit texts to be purely Indian" (1965:56).

1.2. While Katre (1944:129) thinks that "the action of either Dravidian or Munda substratum is subordinate to the action of the Indo-Aryan" itself, other scholars tend to place equal, if not more, emphasis on the "action of the substratum." Such a trend has been developed in the recent work of Kuiper and Emeneau. Emeneau outlines his main thesis as follows: "The fact, however, that the later in Indo-Aryan linguistic history we go, the greater is the incidence of retroflex consonants and the further fact that most of the Dravidian languages and the proto-Dravidian itself have this type of consonant in abundance, can only lead to the conclusion that the later Indo-Aryan developments are due to a borrowing of indigenous speech habits through bilingualism, and to the well-grounded suspicion that even the early development of retroflexes from certain Indo-European consonant clusters results from the same historic cause."[1] Even if "well-grounded," the theory is still a matter of "suspicion" as far as the early stages of Indo-Aryan are concerned. Kuiper (1967:90) raises some important historical-theoretical questions concerning Emeneau's "well-grounded suspicion," but finally accepts it.

1.3. Kuiper points out that there are retroflexes in the *Rgveda* which are reflexes of certain Indo-European consonantal clusters, and that there are also

some retroflexes in a small number of words of "evidently foreign origin," and explains the contribution of these retroflexed foreign words to the development of retroflexion in Vedic Sanskrit as follows: "It may seem natural to assume that in the same way, pre-historic Indo-Aryan, bilingual speakers who recognized a phonemic contrast between dentals and retroflexes in the foreign language, came to interpret the allophones of proto-Indo-Aryan in terms of the foreign phonetic system. The loanwords with retroflexes which—at least in my interpretation of Rgvedic evidence—they must have introduced into Indo-Aryan may have contributed considerably to the spread of this novel phonemic distinction among the speakers of early Indo-Aryan" (1967:89-90). Kuiper agrees with Emeneau in concluding that pre-Dravidian and pre-Indo-Aryan bilingualism provided conditions which allowed pre-Indo-Aryan allophones to be redistributed as retroflex phonemes. But the fact that there are already retroflexes in the present text of the *Rgveda* prompted Kuiper (1967:97) to derive a "historical implication that the period between the arrival of the Indo-Aryans in the subcontinent and the composition of the oldest Vedic hymns must have been much longer than was previously thought." He also refers to the difference between the "older and more recent" parts of the *Rgveda* to explain the gradual increase in the occurrence of these "innovations of Indo-Aryan" (1967:93). Relying on the existence of retroflexion and non-Aryan loanwords in the *Rgveda* and on the fact that the Dāsas and Dasyus of the *Rgveda* are known to the Iranians as Dāhae and Dahyu, Chatterji (1951:159) claims that the Aryans "did not find any appreciable difference in the non-Aryan people they encountered in India from the non-Aryan people they knew in Eastern Iran. It is also equally likely that racial and cultural fusion (including linguistic influencing) had commenced between the Aryans and the Dāsa-Dasyu people outside the soil of India itself—in Iran in all likelihood."

1.4. Emeneau (1974:92) refers to Kuiper (1967) and says that this article "spelled out some of the theoretical and chronological implications of the occurrence of retroflex consonants...in the Rgveda, including other matters, that we must accept pre-Dravidian influence upon pre-Indo-Aryan to explain these full-fledged Rgvedic occurrences." The surveys of previous work in Southworth (1974) and Hock (1975) show that no scholar has as yet doubted the existence of retroflexion in the *Rgveda*. Therefore, it is no wonder that Southworth and Apte (1974:14) remark: "The close contact and wide-spread bilingualism among Indo-Aryan and Dravidian speaking groups in the Vedic period seems well-established by the evidence presented by Kuiper and Emeneau."

Turner has discussed the problem of retroflexion in Indo-Aryan at some length. He takes for granted the existence of retroflexion in the *Rgveda*, and also partly seems to favor the substratum argument (see Turner 1975:226, 240-41, 244, 365). Turner (1924) makes an important distinction between "common Indo-Aryan cerebralization" and "dialectal cerebralization," and tries to reconstruct "the history of the chief waves of cerebralization." Though Turner does not look at the existing Vedic retroflexion as a result of successive modifications of a given oral text under the influence of these waves of cerebralization, he does show that cerebralization is not a monolithic event in the history of Indo-Aryan. He thinks that retroflexion in Indo-Aryan is a combined result of the influence of the Dravidian substratum and of a tendency inherent in Indo-Aryan. According to Grammont (*Mémoires de la Société de Linguistique de Paris*, vol. 19, pp. 254, 267, 277), the origin of cerebralization in Indo-Aryan must be attributed to this general tendency in Indo-Aryan to relax the pronunciation in favor of articulation in the neighborhood of the palatal arch, a general tendency which, he thinks, is also responsible for other sound changes in Indo-Aryan. One can certainly question the origin of such a tendency in Indo-Aryan. Is it a genetic development within a branch of Indo-European? If so, why is it so unique? Is it possible that the origin of this tendency lies somewhere in the influence of India as a linguistic area? These are quite important, but as yet unanswered, questions. Ivanov and Toporov (1968:48-49) offer some interesting diachronic remarks on Sanskrit retroflexion, but their discussion is by no means conclusive.

1.5. So far I have presented the "other side." In the present paper I aim to shake up the strong conviction that retroflex consonants form part of the original *Rgveda* and to show that they were most probably not a "full-fledged Rgvedic occurrence." What was acquired during the long process of pre-redactional oral transmission has been ascribed by these scholars to the original compositions of the *Rgveda*. The Rgvedic evidence produced by these scholars is clearly from only one of the postredactional versions of the *Rgveda* and is not sufficient to let us draw directly any conclusions concerning the original compositions of the *Rgveda*. Along with these scholars, I had myself accepted the occurrence of retroflex consonants in the *Rgveda* and had used it as an argument in some of my previous work (Deshpande 1975*c*: 207). However, since then I have come to quite different conclusions. Though I realize fully that I cannot prove my case beyond the shadow of a doubt and that I cannot produce evidence from those lost original texts of the *Rgveda*, I hope that my arguments are at least sufficient to raise serious doubts concerning the existence of retroflex phonemes in the Ur-*Rgveda*, if not to prove

their nonexistence.

1.6. My conclusions, though unorthodox, are by no means entirely new. Grierson (1929) has given a fascinating account of how the Kashmiri text of *Lallā-vākyāni*, originally composed in the latter half of the fourteenth century, has been preserved orally to the present day without ever having been written down. Grierson (1929:74) points out that "save for a few forms that have remained unchanged...her verses are in what is practically modern Kashmiri." However, the text of the *Mahānayaprakāśa* was composed in the fifteenth century and was written down at the time it was composed, and hence its language is preserved without any further change. Grierson describes the "unconscious" change taking place in a precodification oral tradition: "Each hymn [of *Lallā-vākyāni*] was handed down from teacher to pupil through five centuries, care being taken to preserve the text unchanged. But during all this time the language was insensibly changing, and, as there was no written record of the originals in the form in which they were first uttered, the language of the hymns insensibly changed at the same time. The reciters, it is hardly necessary to point out, were unaware of the change of language that was going on. In each generation that was very slight, and was not noticeable, but the total of the changes at the end of five centuries was very great indeed....It was so gradual that no one was ever aware that any change was taking place at all" (1929:75). Grierson clearly perceived that the same must have happened in the case of the Vedic texts before they were codified by the redactors. He says: "Unfortunately, for the Veda, we have nothing corresponding to the *Mahānayaprakāśa*, i.e. nothing written, and fixed in writing, at about the time that the oldest Vedic hymns were composed, so that we are unable to gauge the difference between the original form of the hymns and the form given to us by the Vyāsa (i.e. the redactor); but the parallel case of the *Mahānayaprakāśa*, is instructive, and shows us that the difference must have been great. In other words, the Rg-veda, as we have it now, is couched in a modernized form of the language in which the oldest hymns were originally composed" (1929:76-77).

2. PLURALITY OF RGVEDIC RECENSIONS

2.1. In most recent discussions, a historical fact of utmost importance is often overlooked, namely that the text of the *Rgveda* that we have today is not necessarily the original *Rgveda*. What we have is only one recension (*samhitā*) of the *Rgveda* compiled several centuries after the hymns were composed by the Rgvedic sages. After the hymns were composed over a period of several generations of sages, they remained for a long time as a kind

of floating oral literature preserved through family traditions. At a later time, about 700-800 B.C., several compilers or editors collected these hymns, arranged them according to certain principles, and prepared various editions, along with corresponding "word texts" (*pada-pāṭha*), by analyzing the words of the orally preserved hymns. The available recension of the *Ṛgveda* is ascribed to the compiler-sage Śākalya and his school. Śākalya is quoted by Pāṇini,[2] the *Ṛk-Prātiśākhya*,[3] and texts such as the *Aitareya* and *Śāṅkhāyana Āraṇyakas*,[4] and could not possibly have been a mythical figure.

2.2. Other recensions of the *Ṛgveda* did exist but are lost today. We hear of the Bāṣkala recension which had a few more hymns than Śākalya's recension. The *Ṛk-Prātiśākhya* and the *Śaiśirīya-Śikṣā* belong to the Śaiśirīya recension.[5] Having studied the treatment of *Abhinihita Sandhi* in the *Ṛgveda* in the *Ṛk-Prātiśākhya* by Śaunaka, Rastogi (1957:29) suspects that "possibly Śaunaka had a text before him which was not totally identical to the extant one." The *Śāṅkhāyana Āraṇyaka* belongs to the Śāṅkhāyana tradition. There are a few mantras in this text which cannot be traced to Śākalya's recension and belong most probably to the Śāṅkhāyana recension of the *Ṛgveda*.[6] The *Aitareya* and *Śāṅkhāyana Āraṇyaka*s refer to the Māṇḍūkeya recension which preceded Śākalya's recension and differed from it in certain respects.[7] Patañjali speaks of the well made recension (*sukṛtā saṃhitā*) of Śākalya but also says that there are twenty-one different recensions of the *Ṛgveda*.[8] Pointing to a hymn of three verses and three verses of three other hymns which do not have their *pada-pāṭha* prepared by Śākalya, Ghosh (1951:231) claims that "hymns and verses could have been added to the *Ṛk-Saṃhitā* even after the date of Śākalya." We also know of other redactors of the *Ṛgveda* such as Rathītara (Śākapūṇi) and Bharadvāja Bāṣkali (Bishnupada Bhattacharya 1958:12).

2.3. Several Indologists have expressed doubts as to the originality of the present text of the *Ṛgveda*. Bloch (1970:1-2) remarks: "The editors of the Ṛgveda, as we have it, have partially adapted to their own dialects various religious texts composed in another dialect." Oldenberg (1962:28) acknowledges that "the study of Śaunaka's work [that is, the *Ṛk-Prātiśākhya*] affords us the proof that *from that time on* [author's emphasis] the Vedic hymns, protected by the united care of grammatical and religious respect for letters, have suffered no further appreciable corruptions." However, worth noting are his comments on the preredaction textual transmission: "In some cases, isolated details of the additions of prior epochs were caught and clung to with felicitous acumen; in others, no hesitation was had in wiping out of existence entire domains of old and genuine phenomena to suit half-correct theories,

so that the most patient ingenuity of modern science will only be able to restore in part what has been lost" (1962:27). Oldenberg (1962:26) reminds us that "the collection was re-corrected on repeated occasions. It is conceivable enough that thus the original structure, yes, even the existence itself of special hymns was often injured, effaced, or destroyed." Basing his conclusions on metrical evidence, Macdonell (1916:14) inferred that there must have been a period of transition between the original composition and the final redaction of the *Ṛgveda* by Śākalya. Meillet (1912-13) has discussed the changes effected by the editors of the *Ṛgveda* with respect to *h* (⊃*bh* and *dh*) and *r* (⊃*l*) in accordance with their dialect which preserved the distinction between Indo-European *r and *l.[9] Bloch (1970:2) rightly observes that the editors "could not, however, touch the grammatical forms without seriously modifying the aspect of the religious language borrowed by them." *Thus, most of the changes which occurred during the early "natural" oral transmission were euphonic and phonetic and were mostly unconscious changes, not deliberate alterations.* Recently, Esteller has devoted a number of publications to the question of the reconstruction of the original *Ṛgveda*.[10] He calls the text of Śākalya a "palimpsest," a written-over text, and remarks: "The bamboo-curtain of a Ṛgveda-Saṃhitā palimpsest was woven twenty-five centuries ago by the skillful and well-meaning but deformingly reforming, updatingly defacing (and thus palimpsesting) paṇḍita-mentality of the Saṃhitā-kāra agency in the Śākala-śākhā tradition" (1968:16; 1969:17). It is quite natural that not every scholar would agree with Esteller, for example Abhyankar (1969). Particularly when he alleges that the redactors made "conscious" grammatical changes and changes in the word order, etc., we must reject his views. For a critique of Esteller's theories, see Mehendale (1975).

3. RECENSIONAL VARIATION: AN EPISTEMOLOGICAL PROBLEM

3.1. We must, at this stage, face up to certain important epistemological questions. It must be said that all our knowledge about the *Ṛgveda* rests primarily on the recension of Śākalya as we have it preserved today. To what extent can we say that Śākalya's text exactly represents the phonology of the original *Ṛgveda*?

Let us consider a simple example. The *Ṛgveda* as we have it changes intervocalic *ḍ* and *ḍh* into *ḷ* and *ḷh*. The retroflex *ḷ* is not known to the classical Sanskrit. Many scholars have considered *ḷ* as forming a genuine part of the original *Ṛgveda*. However, Bloch (1970:156), with his characteristic caution, says: "Does it go back directly to the Vedic language? We dare not

affirm it." Concerning the *l*/*ḷ* variation in Prakrits, he remarks: "Paiśācī is the only dialect which is shown as normally converting the intervocalic Skt. *l* into *ḷ*. But it should also be noted that the rules concerning the same date from Hemacandra, that is to say from a very late epoch. The texts, written in other dialects, do not have a uniform sign. Thus, as could be expected, the meridional manuscripts have *ḷ*, while those of the North keep *l*'" (1970:154). Burrow (1971:556) refers to the continuation of *ḷ* into Pāli. However, that also could very well be a result of Dravidian influence on the Sinhalese text-transmission of Pāli, and we do not know whether the "Indian Pāli" had this sound before being transported to Ceylon. In this connection, then, it is important to note Vaidya's remarks concerning the text-transmission of the *Ṛgveda* as we know it. He points out that the Ṛgvedic Brahmins at present are to be chiefly met with in the Deccan and the Koṅkaṇ and in some parts of southern India. The *Ṛgveda* is the most important and the oldest of all the Vedas, and yet its adherents are so few and found only to the south of the Vindhyas. Vaidya (1930:56) attributes the existence of the retroflex sounds *ḷ* and *ḷh* in the present text of the *Ṛgveda* to this predominantly southern (or rather Dravidian) tradition of oral transmission and suggests that these sounds "are not to be found in the recitation of the Black Yajurveda and probably not in the recitation of the other Śākhās of the Ṛgveda itself now extinct."[11] I value Vaidya's remarks more as a caution. I shall try to show later that substitution of the sounds *ḷ* and *ḷh* in the available recension of the *Ṛgveda* for intervocalic *ḍ* and *ḍh* originated most probably in the oral traditions in northeastern India and did not exist in the Ur-*Ṛgveda*.

3.2. How far can we say that the distribution of retroflex sounds and their statistics in the Śākalya text represent the reality of the original *Ṛgveda*? Let us consider the example of different recensions of the Yajurveda which are fortunately available to us. As Hoffmann (1960:176-77) shows, the Maitrā-yaṇī text has the reading *pányāt pányatarā*, while the Kāṭhaka text reads *pányāt pányatarā*. One may note that the Kāṭhaka text itself has *pányāt pányatarā* beside *pányāt pányatarā* without cerebrals (Bloomfield and Edgerton:vol. 2, p. 87). This helps us realize that in a chaste epistemology we must begin with all these variant readings of different recensions and then recon-struct the original reading if we can. The important point is that the original—the prerecensional original—is not given to us but must be reconstructed from what *is* given to us. After comparing a few passages from the Kāṭhaka, Kapiṣṭhala-Kaṭha and Maitrāyaṇī recensions, Kuiper (1958:350) concludes: "The parallel texts [Kāṭhaka and Kapiṣṭhala-Kaṭha] leave no doubt that *krūḍayati* is a variant of the rather rare verb *kūḍayati* or *kūḷayati*, for which

the Maitrāyaṇī version has substituted the current synonym *vidahati*." This example brings forth various different issues. We not only have phonological alternation, but occasionally a recension substitutes a "current synonym" for an archaic expression. By the same token, it is perfectly logical to argue that after a lapse of several hundred years, the received product of the precodification oral tradition may exhibit rather more "current" phonological features.

3.3. Comparing the identical hymns in the Śaunakīya and the Paippalāda recensions of the *Atharvaveda*, one finds the same principle of recensional variation:[12]

1. *tanvo adya dadhātu me* (*Ś-AV*, 1.1.1)
2. *tanvāmadhyā dadhātu me* (*P-AV*, 1.6.1)
3. *vidmo ṣvasya mātaram* (*Ś-AV*, 1.2.1)
4. *vidmo hyasya mātaram* (*P-AV*, 1.3.1)
5. *apo devīrupa hvaye* (*Ś-AV*, 1.4.3)
6. *apo devīrupa bruve* (*P-AV*, 1.2.3)

Thus, we cannot consider either of the two recensions as automatically representing the original *Atharvaveda*. With respect to this variation, Acharya (1971:97) says: "As has been rightly pointed out by Hoffmann (IIJ, XI, 1968, pp. 1-10), these variations should be regarded as authentic in as much as they are taken to form the peculiarities of the particular *śākhā* to which they belong." Quite instructive is Edgerton's (1936:507-8) discussion of the two recensions of the *Saddharma-puṇḍarīka*.

3.4. Coming back to the *Ṛgveda*, we have the biggest hurdle to overcome. The fact that one recension is all that we have creates an illusion that this is THE *Ṛgveda*. However, even the existing exegetical literature on the *Ṛgveda* indicates that there must have been serious differences in various text-tradi-tions. Apart from differences in wording (as we have seen in the two recen-sions of the *Atharvaveda*), the different recensions and oral traditions must have differed in the pronunciation of sounds, too. Uvaṭa, the commentator of the *Ṛk-Prātiśākhya*, says that while some traditions pronounced an *anus-vāra* in the sequence *maṁścatve*, other traditions pronounced a nasal vowel, i.e., *māścatve*.[13] As I have discussed elsewhere, the *anusvāra* varied from a voiced consonant-or-vowel pronunciation to an unvoiced nasal fricative according to the testimony of the *Ṛk-Prātiśākhya* itself.[14] The *Ṛk-Prāti-śākhya* (13.15-16) refers to the variation in the pronunciation of the diph-thongs *e, o, ai* and *au* in the different schools of reciters.[15] It is extremely important to note that the so-called dental series *t, th, d, dh, n* is in fact

danta-mūlīya 'produced at the roots of the teeth' or alveolar, according to the *Ṛk-Prātiśākhya* (1.9), while for all other known traditions, including Pāṇini, these are dental (*dantya*) sounds. The *Prātiśākhya*s vary on the pronunciation of *r*, *ṛ*, the *k*-series and several other sounds. It may be noted that the *Ṛk-Prātiśākhya* (1.11) quotes the view of Vedamitra that *ḍ* and *ḍh* were in fact palato-velars (*jihvā-mūlaṁ tālu ca*)[16] and not retroflexes. This brings these sounds closer to the Iranian *źd* and *źdh*. The more we study these variations, the more ignorance we must confess concerning our knowledge of the exact original sound system of the Vedic texts. In terms of our epistemology, whatever Vedic literature is given to us is already in the form of various sectarian recensions of a relatively later period, a period in which variation of pronunciation existed among different regions and different Vedic schools. We do not have a presectarian recension of any of the Vedic texts, let alone the prerecensional original compositions of the Vedic poets.

3.5. The strength of retroflexion in Indo-Aryan has always varied in different periods of Indian linguistic history and in different regional and social dialects. Based on a study of modern Indian languages, Southworth (1974:211-12) concludes that the strength of retroflexion was greater in the northwest and in the South and that it was weaker in the northeastern regions. However, that may not have been the case for all periods of Indian linguistic history. Patañjali shows that the local Prakrit had words like *goṇī*, *yarvāṇa, tarvāṇa, āṇapayati, diṇṇa*, etc., for the Sanskrit words *gauḥ, yad vā naḥ, tad vā naḥ, ājñāpayati* and *datta.*[17] These are examples from the eastern part of the country during the immediate post-Mauryan period. Looking at the Aśokan inscriptions, one finds that the eastern region shows a higher frequency of cerebrals as compared to the western region. Bloch (1970:6) points out that *r* plus dental gives a dental in the west, and a cerebral in the east, but while we find "*ṇ* in the west, in the east there is no cerebral *ṇ* nor a palatal *ñ*." This is confirmed by the extensive work of Mehendale, who says: "The dentals under the influence of *r* or *ṛ* are cerebralised in all inscriptions of Aśoka, save those in the West (only *rdh* is cerebralised so early as that in the West). The influence is observed in the West mostly from the beginning of the Christian era. The dentals *t* and *th* in combination with *ṣ* are, however, cerebralised at all places since the earliest times" (1948:xxiii); and, "It will be observed that the Western dialect is the least affected by cerebralisation" (1948:18).

3.6. Even within the same region of northwestern India, there were variations. Thus, while the Prakrit Dhammapada knows the distinction between *n* and *ṇ*, Konow (1936:607) remarks: "It is, however, remarkable that the

Kurram casket inscription which contains a quotation of a canonical passage written in practically the same language as Dhp. [i.e., Dharmapada], has no trace of the Dhp. distinction between *n* and *ṇ*. We are left with the impression that Dhp. in this respect represents a normalization which may be due to the influence of another literary Prakrit, or belongs to a limited territory within the area, where the treatment of *n* was different." While the Aśokan inscriptions do show a regional variation in the strength of retroflexion, one may contrast the treatment of literary Prakrits by the Prakrit grammarians. The cerebralization of dentals under the influence of *r*, *ṛ* or a sibilant is noticed by the grammarians as a feature common to all Prakrits, without any dialectal variation (Mehendale 1948:xxxi).

3.7. Very often the orthography of documents is misleading. With respect to literary Prakrits, Ghatage (1941:23) points out: "By a convention the editors write *ṇ* everywhere in purely Mahārāṣṭrī works. But the practice of the Jaina scribes to write initially *n* is followed in editing works in AMg [i.e., Ardhamāgadhī] and Jain Mahārāṣṭrī. It has been suggested that initial *n* became alveolar and was felt by some as dental and by others as cerebral." In the Kharoṣṭhī inscriptions "*n* is cerebralised both initially and medially... *n* is also preserved in many cases" (Mehendale 1948:304). With respect to this variation, Konow (1929:ciii-civ) writes: "The impression left by this state of affairs is that intervocalic *ṇ* and *n* had the same sound, at least over the great part of the territory, and that the sound was probably a cerebral. The significance of the two letters was consequently lost sight of, the traditional writing acting as a check on the development of a consistent orthography." This is quite comparable to Grierson's (1906:18) remarks on the modern Paiśācī languages: "Cerebral and dental mutes appear to be interchangeable.... So far as I can ascertain...there is no real distinction between these two classes of mutes, and there is only one class...a semi-cerebral....To some, these sounds appeared to be dentals and were recorded as such; and to others they appeared to be cerebrals and were recorded as such....Identical words are quite frequently recorded with cerebral letters by one and with dental letters by the other."

3.8. Along with these perceptual and orthographic problems, we must also bear in mind certain other difficulties. We find that one passage of *Samaya-sāra* has the reading *hodi* (<*bhavati*), while the other has *havadi.*[18] The meter is not affected by either reading. This is also true of retaining or dropping the intervocalic voiced stops and of inserting or not inserting the euphonic weak *y*. For example, while the printed text of Kundakunda's *Pañcāstikāya* (verse 49) reads *egattappasādhagaṁ* (<*ekatvaprasādhakam*), the commentary

Tātparyavṛtti of Jayasenācārya has the reading: *eyattapasāhagam*. The morphology of the two readings is the same, but they represent two different phonological states. Similar other variants are: text *pagāsagā*, commentary *payāsagā* (verse 51); text *padhāṇā*, commentary *pahāṇā* (verse 53); text *hoi*, commentary *havadi* (verse 54); *bhaṇidam*, commentary *bhaṇiyam* (verse 54).[19] These are variations of the "same" text. These are all phonological variations of the kind which does not seriously affect the morphological or the syntactic content of the text or its metrical form, and hence they seem to have been tolerated with ease by the reciters, scribes, and readers. But this creates an intolerable situation for a critical historical understanding of what the exact phonology of the original text might have been, and such a picture of the original phonology often remains a matter for scholastic reconstruction. What is important is the fact that such variations as those mentioned above did exist and were treated as a matter of little concern, and were not normally viewed as seriously altering the basic text.

3.9. In the oral transmission of the Vedic texts, there are two important historical periods. The first is the period of their composition and scattered retention by the early Vedic families. This is a "natural" period of oral transmission. The second is the scholastic period of recension-making and also of the growing formalism concerning the magical potency of the exact pronunciation. The text of the Vedic compositions must have been quite fluid, in both the synchronic and diachronic sense, in the prerecensional oral traditions. Otherwise we would not be able to explain the vast differences between the various recensions of the Vedic texts. But the postrecensional period of oral transmission must be clearly distinguished from this early fluid state. In this later period, monumental intellectual efforts have been made to preserve the recensions intact in the form given them by the various sectarian schools. These schools devised meticulous methods of oral recitation like the *pada-pāṭha* and textual permutation-combinations (*vikṛti-pāṭha*). Particular sectarian phonetic treatises were written to "freeze" the then existing sectarian pronunciation. These traditions of formal recitation have been kept up until recent times, and they maintained an "idealized text" more or less intact. I call it an idealized text because, in fact, the pronunciation of the same Vedic text in Kashmir, Bengal, and Tamilnadu was never the same. Regional variation in Sanskrit pronunciation has been ably described by Chatterji (1960*a*). I shall take up the concept of fluidity of the preredactional oral traditions later in detail.

4. *AITAREYA-ĀRAṆYAKA* (3.2.6): ITS IMPLICATIONS.

4.1. Scholars who attempt reconstructions of the original *Rgveda* have not paid much attention to discussions of the various redactors and editors of the *Rgveda* found in the *Aitareya* and *Śāṅkhāyana Āraṇyakas*. Though it is true that a large number of these discussions on the notion of *saṁhitā* are somewhat mystical and mythological, there are still a very significant number of linguistic discussions. The participants in these discussions, such as Śūravira Māṇḍūkeya, Hrasva Māṇḍūkeya, Mākṣavya, Śākalya, and others, clearly represent the first known generation of scientific linguistic thinkers and are quoted directly as respected authorities by the *Prātiśākhya*s and by Pāṇini.[20] We cannot underestimate the value of their linguistic speculations simply because they also engaged in the study of mystical and theological aspects of speech. Discussions such as those of "colors," "deities," and "castes" of sounds and other linguistic items are found even in the *Prātiśākhya*s. What follows is an examination of certain passages related to the question of retroflexion found in these texts.

4.2. How far are the retroflexes in the existing *Rgveda* historically authentic? In my view, they are authentic only in that they represent the sounds in the text as it was preserved in the Śākala school at the time of the formation of this particular recension. Beyond this point we are entering the field of reconstruction. If we know that at a certain point there had been doubts and differences concerning Rgvedic retroflexion, then we should be less categorical about ascribing retroflexion existing in the present text to the original. Such an indication is to be found in the *Aitareya-Āraṇyaka* (3.2.6 [Keith: 256-57]):

Now Kṛṣṇahārīta proclaims this secret doctrine, as it were, regarding speech to him. Prajāpati, the year, after creating creatures, burst. He put himself together by means of the meters, therefore it is the *Saṁhitā*. Of that *Saṁhitā* the letter *ṇ* is the strength, the letter *ṣ*, the breath, the self. He who knows the verses in the *Saṁhitā* and the letters *ṇ* and *ṣ*, he knows the *Saṁhitā* with its breath and its strength....*IF HE IS IN DOUBT WHETHER TO SAY IT WITH AN N OR WITHOUT AN N, LET HIM SAY IT WITH AN N. IF HE IS IN DOUBT WHETHER TO SAY IT WITH AN S OR WITHOUT AN S, LET HIM SAY IT WITH AN S.*

HRASVA MĀṆḌŪKEYA SAYS: "IF WE REPEAT THE VERSES ACCORDING TO THE SAṀHITĀ, AND IF WE RECITE

(ACCORDING TO) THE TEACHING OF MĀṆḌŪKEYA, THEN THE LETTERS Ṇ AND Ṣ ARE OBTAINED FOR US."

STHAVIRA ŚĀKALYA SAYS: "IF WE REPEAT THE VERSES ACCORDING TO THE SAṀHITĀ, AND IF WE RECITE (ACCORDING TO) THE TEACHING OF MĀṆḌŪKEYA, THEN THE LETTERS Ṇ AND Ṣ ARE OBTAINED FOR US."

This is an extremely important passage. Regarding the doctrine, which is repeated twice, Keith (p. 257, fn. 9) comments: "The sayings are identical and apparently this is intended to denote that the doctrine received universal acceptance." I do not quite agree with Keith's interpretation. The passage does indeed emphasize and preach the doctrine of *ṇ* and *ṣ*, but it also implies at the same time that there were others who did not accept this doctrine and doubted the correctness of this practice.

4.3. The word *saṁhitā* could theoretically mean either a *sandhi* "joint, euphonic combination, juncture," or it could mean the whole "continuous, undivided" text, as contrasted with the later scholastic *pada-pāṭha*. If the word *saṁhitā* refers only to the "joints," then the passage would refer only to *ṇ* and *ṣ* produced at the joints or boundaries of contiguous words. This would imply that while Śākalya and Māṇḍūkeya recensions read *mo ṣu ṇaḥ* (< *mā + u + su + naḥ*), there were other traditions which doubted the existence of *ṇ* and *ṣ* in such cases and perhaps read **mo su naḥ*. However, in this interpretation of *saṁhitā*, the dispute would not refer to those instances of *ṇ* and *ṣ* which are in some sense "internal" or intrinsic to the words and do not depend on word junctures. However, whether internal or external, the sounds *ṇ* and *ṣ* in the present *Rgveda* passage *mo ṣu ṇaḥ* and in words like *viṣṇave* or *vidatheṣu* are produced by the same basic historical rules which cover both the internal and external *ṣ* and *ṇ*. The word *saṁhitā* is frequently used for "whole" texts, and we know that Śākalya and Māṇḍūkeya collected these "continuous texts" and then subjected them to a scholastic analysis. The analytical "word-text" was not given by the early oral tradition. The creation of the "word-text" is the very first attempt to analyze and explain the orally received songs. As I shall demonstrate later, during the preredaction period, these Vedic texts were passed down as unanalyzed sequences and were split into words later by scholars like Śākalya. But the historically significant fact that different redactors disagreed even on the words in a given sequence clearly indicates the manner in which these "continuous texts" were transmitted. Many phonetic changes took place in these continuous

sequences at a time when there was no clear awareness of word boundaries, and hence the distinction between "internal" and "external" is somewhat irrelevant with respect to pre-*pada-pāṭha* oral transmission. For instance, it seems that the original sequence **āpṛṇosi* diverged later into *āpṛṇosi* and *āpṛṇoṣi*. Then the sequence *āpṛṇoṣi* was analyzed as *āpṛṇaḥ + asi*, and the sequence *āpṛṇoṣi* was looked upon as a single verbal form from the root *pṛ-* (*Vedic Variants*, vol. 2, p. 152).[21] In my view the above passage gives an indication of how the phonologies of orally preserved continuous texts had diverged. But even in the limited interpretation of *saṁhitā* as "juncture," the passage indicates that there were people who considered the *saṁhitā* text to be **mo su naḥ* rather than *mo ṣu ṇaḥ*. I shall demonstrate later that this latter kind of retroflexion is irregular even in the existing Vedic recensions.

4.4. We have to examine this passage carefully. Contrary to Keith's suggestion, I see in this passage an indication that even at this stage, there were some people who suspected that the original *Rgveda* might have been *aṇakāra* "without *ṇ*" and *aṣakāra* "without *ṣ*." The very phrase *"if* we say [i.e., follow in recitation] the teaching of Māṇḍūkeya, *then* the letters *ṇ* and *ṣ* are obtained for us" seems to indicate that if the teaching of Māṇḍūkeya was not followed, then these sounds were not obtained in the *Rgveda*. This would be parallel to the statement: "If we accept the Maitrāyaṇī tradition, then the forms *pāṇyāt pāṇyatarā* are *saṇakāra* 'with *ṇ*,' but if we follow the tradition of the Kāṭhaka reciters, these forms could be *aṇakāra* 'without *ṇ*'." Thus, the presence or absence of *ṇ* is not absolute with respect to the Ur text of the *Yajurveda* but is definitely a recension-specific phenomenon. Kuiper (1958: 350) claims that *krūḍayati* of the Kāṭhaka text is replaced by the "current synonym" *vidahati* in the Maitrāyaṇī text. One could similarly argue that the nonretroflexed forms *pānyāt pānyatarā* of the Kāṭhaka text (which occur beside the retroflexed forms *pāṇyāt pāṇyatarā*) are replaced by the more current retroflexed forms in the Maitrāyaṇī text. Thus one could claim the following probable development: The Ur-*Yajurveda* had **pānyāt pānyatarā*. By the time of the Kāṭhaka recension, retroflexion had made its way into the oral tradition but was still quite unstable. Thus, the Kāṭhaka text has retroflexed forms beside nonretroflexed forms. By the time the Maitrāyaṇī recension was codified, or in the region where it was codified, the process of cerebralization had advanced further, and hence the Maitrāyaṇī text shows only the retroflexed forms. I am, by no means, claiming that this was the actual development. The example simply shows the possibility and perhaps the necessity of such a reconstruction.
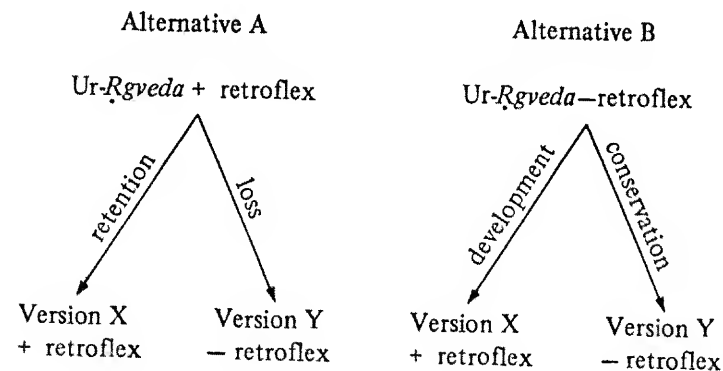
4.5. The *Aitareya-Āraṇyaka* passage indicates that not every school ac-

cepted the teachings of the Māṇḍūkeya tradition. At any rate, the *Aitareya-Āraṇyaka* was known to Pāṇini, who also quotes Śākalya (Keith:intro., p. 25; p. 73). The Māṇḍūkeya tradition preceded Śākalya, who accepted its prescription of ṇ and ṣ in the recitation of the *Ṛgveda*. We must recognize the fact that whatever the statistics of any retroflex sound that we collect from Śākalya's text, they do not directly represent the Ur text of the *Ṛgveda*. They only reflect the phonology of Śākalya's recension.

4.6. What is the intention in saying that ṇ is the strength and ṣ is the breath of the *saṁhitā*? I have discussed this issue in another article (Deshpande 1976:177, fn. 12). Briefly stated, we may ask why only these sounds posed a doubt in the minds of some of the reciters. The answer to this question requires a careful study of the *Prātiśākhya*s and the Indo-Iranian sources of the Sanskrit retroflexes. The only retroflex sounds known to the *Prātiśākhya*s are the retroflex series ṭ, ṭh, ḍ, ḍh, and ṇ, and the sibilant ṣ. Occurrence of ḷ and ḷh as intervocalic allophones of ḍ and ḍh in the present text of the *Ṛgveda* very well could be a recension-specific phenomenon, as is certainly the case with the different recensions of the *Yajurveda*.[22] The vowel ṛ is not retroflex, but either *jihvāmūlīya* 'produced at the root of the tongue' (velar or uvular?) or alveolar; and r is either dental or alveolar.[23] It seems quite conceivable that r and ṛ (that is, ərə), which are also found in Iranian, continued from Proto-Indo-Iranian to the *Prātiśākhya* period in their non-retroflex form. We see that ṇ and ṣ are relatively more unpredictable in their distribution, while ṭ, ṭh, ḍ, ḍh are more stable by this time. One conceivable reason for this is that sounds such as ḍ and ḍh are often reflexes of the Proto-Indo-Iranian clusters such as *źd and *źdh. Since *ź did not exist in later Indo-Aryan, there was no question of confusing ḍ and ḍh with any existing *ź clusters. Similarly, the operation of Fortunatov's Law reducing IE *l plus dental to a Sanskrit retroflex was complete by the pre-*Prātiśākhya* period, leaving only very few examples of such clusters behind, e.g., Vedic *gáldā-* beside *gárdā-*. However, n>ṇ and s>ṣ are changes which have numerous exceptions and spontaneous occurrences (see section 9.1-5). Though the statement of the *Aitareya-Āraṇyaka* directly relates only to the sounds ṇ and ṣ (which are peculiarly involved in mechanical metrical retroflexion), the historical source of this concern must be related to the entire question of retroflexion at an earlier period of the language. It seems difficult for me to accept a stage in the history of ancient Indo-Aryan at which the phonemes ṭ, ṭh, ḍ and ḍh had emerged but ṇ did not exist, since the shifts caused by principles like Fortunatov's Law should apply equally to ṇ. Though the Prakrit languages show different stages in the distribution of ṇ in different times and

regions, it is hard to separate the general emergence of ṇ from that of the other retroflex consonants. The case of ṣ is slightly different, since there are many Prakrits known to us which had other retroflexes but did not have ṣ. This sound is found only in the northwestern Prakrits and Dardic. Emergence of ṣ is predominantly due to a partial modification of the Indo-European *ruki* rule in Sanskrit, and apparently did not cover all the Indo-Aryan dialects. These points will be discussed in detail later.

4.7. If at a late period, such as that of the *Aitareya-Āraṇyaka* (about 700 B.C.), retroflexion of ṇ and ṣ was being debated among various schools of Ṛgvedic recitation, what kind of a phonetic picture can we reconstruct for the Ur-*Ṛgveda*? The methodological problems in such an attempt are numerous. We not only have to follow a method similar to "internal reconstruction," but perhaps must also go beyond it, since we are dealing with purely Aryan compositions in a form which was fixed and handed down to us after Aryan-non-Aryan convergence was well advanced. Thus, we have to figure out the impact of such convergence on the oral text transmission and try to eliminate those features which are most probably results of this convergence. It is difficult for me to accept the view that the retroflex phonemes existed in the Ur-*Ṛgveda* composed before the Aryan-non-Aryan convergence, and that several centuries later, when in fact Aryan-non-Aryan convergence was well developed, a dispute arose among the traditional reciters about the authenticity of these sounds. Theoretically, either we have to accept the hypothesis that retroflexion existed in the Ur-*Ṛgveda*, and then was lost or retained in different recensions, or we accept a nonretroflexed Ur-*Ṛgveda* with the development of retroflexion in particular recensions and the retention of a less retroflexed or nonretroflex text by certain "conservative" schools of Vedic recitation.

Alternative A

Ur-*Ṛgveda* + retroflex

retention   loss

Version X   Version Y
+ retroflex   − retroflex

Alternative B

Ur-*Ṛgveda* − retroflex

development   conservation

Version X   Version Y
+ retroflex   − retroflex

Of these two alternatives, alternative B is more logical and suits the historical situation in India as we know it from various sources. It also resembles previous attempts by Mehendale (1968:96-97, 101) to reconstruct certain "pre-Sanskrit" stages. In his analysis Mehendale depends primarily on the formal linguistic method of "internal reconstruction," and hence calls the reconstructed stage "pre-Sanskrit." In my view, we have the additional sociolinguistic complexity of Aryan-non-Aryan convergence to consider, and I find that his "pre-Sanskrit" stage often closely resembles my concept of "preconvergence" Sanskrit in which the original *Rgveda* was composed.

4.8. In the period between the composition of the hymns (1500-1200 B.C.) and the work of the compilers of various recensions (about 700 B.C.), the retroflex sounds had developed in Sanskrit and had become an organic part of it. Since the Vedic hymns were being preserved and transmitted orally, often without awareness of word boundaries in continuous sequences, the phonology of the language of the reciters naturally had an impact on the transmitted recensions. We may compare this with the different pronunciations of Pāli texts in different countries of Southeast Asia. Thus, at a later time the dispute arose quite naturally as to whether the orally transmitted texts should or should not, and did or did not, have these retroflex sounds, the "innovations of Indo-Aryan" as Bloch calls them. Known variations in the different recensions of the *Atharvaveda, Yajurveda*, and even within the text of the *Rgveda* as we have it, are definitely a result of this natural instability of oral literature before it is codified. I shall discuss examples of such variation later on.

4.9. It is extremely important to note that the present recension of the *Rgveda* is based on the northeastern recension of the Māndūkeya tradition which had established itself in Magadha. The Aryan character of groups like the family of Māndūkeyas is a matter of suspicion (see Kosambi 1947 and 1950). There is even some question concerning the origin of the Aitareya and the Kausītaki traditions. While the tradition considers Aitareya to be the son of a slave woman, there is a possibility that the founder of the Kausītaki tradition was a purified *vrātya*, a non-Vedic Aryan (see Banerjea 1963: 164ff). We also know from other sources that there were severe disputes over the question of retroflexion in Magadha in ancient times. Rājasekhara informs us in his *Kāvyamīmāmsā* (*Gaekwad's Oriental Series* edition, Baroda, 1916, p. 50) that the king of Magadha, Śiśunāga banned retroflex sounds in his harem. Specifically he banned the following eight sounds: *t, th, d, dh, ś, s, h,* and *ks*. It has been suggested that Śiśunāga was a non-Indo-Aryan person. Deb (1922 and 1925) argues that he was an Elamite, while A. Banerji Shastri

(1936-37) contends that he was a Nāga prince. Whatever the origin of the Śiśunāgas, it is extrememly significant that there were poignant disputes over retroflexion in Magadha even up to the fifth century B.C.

5. PRE-RGVEDIC ARYAN-NON-ARYAN BILINGUALISM?

5.1. The postulation of the Ur-*Rgveda* without any retroflexes may at first seem to be a radical departure. However, if we reinterpret the facts known about the *Rgveda* and its transmission—as well as the history of the development of religion, mythology, and social structures—in the light of what we have learned from studies of contemporary bilingualism, then we find support for such a hypothesis.

5.2. We cannot deny that the incoming Aryans came in contact with certain non-Aryan people in India. There is ample evidence for such contacts. Though in most cases the Rgvedic Aryans are seen as generally hating the non-Aryans (i.e., the Dāsas, Dasyus, and Panis), occasionally we find that some Aryans did enter into political and military alliances with some non-Aryans, as evidenced by the War of Ten Kings. We may also agree that some of the Vedic sages like Kavaṣa Ailūṣa had non-Aryan sounding names and were a sort of "converted" non-Aryan (cf. Kuiper 1967:87). Moreover, one may perhaps agree with Kosambi (1965:82-83) that the unorthodox birth-account of Vasiṣṭha indicates his non-Aryan origin. One may perhaps also accept that there is grafting of an Austroasiatic myth onto one of the Indra myths (Kuiper 1967:87). On rare occasions, the Rgvedic poets praise gifts from certain non-Aryan kings like Brbu. I am not sure exactly how to interpret and evaluate these "sporadic reports" of Aryan-non-Aryan contacts, but even if one were to accept them all as reflecting historical facts, the general picture in the *Rgveda* is still one of Vedic Aryans in this early period hating non-Aryans and despising their religion and speech. Apart from "implications" and "assumptions," there is not the slightest evidence in the *Rgveda* of any large-scale bilingualism or social or religious convergence of Vedic Aryans with non-Aryans. For a critique of Kosambi's views on such early non-Aryan influence in the *Rgveda*, see Brough (1953:xiv ff.).

5.3. Emeneau (1974:93) not only proposes that there was "extensive bilingualism," but that "Sanskrit was handed down at some early period by a majority of speakers who learned it as a second language, their first language being Dravidian. In their first language, there were contrasting dentals and retroflexes; in Sanskrit, or we had better say pre-Indo-Aryan, there were only dentals and some allophones of dentals 'backed' toward the Dravidian retroflex position. Assignment of these backed allophones to their own Dravidian

retroflexes was easy for native Dravidians." Emeneau himself begins this statement with "we must postulate," and it must be said that there is no positive evidence to turn this postulation into a historical assertion, particularly with respect to the period of the composition of the *Rgveda*. *It is impossible to believe that the composers of the Rgveda had Sanskrit as their second language and had some Dravidian language as their first language.*

5.4. However, the linguistic "process" suggested by Emeneau is quite significant, and I shall try to demonstrate in this paper that this process must have taken place in the text transmission of the *Rgveda*, rather than prior to the original composition of the Vedic hymns. Emeneau himself and others have adduced strong evidence for the socioreligious and linguistic convergence of the Indo-Aryans with indigenous populations at a somewhat later period.

5.5 Brown (1953:131) describes the Vedic Aryans as being "more like their linguistic and religious kinsmen, the Iranians, than like their eastern Indian contemporaries." Even by the time of the composition of the *Rgveda*, the Vedic Aryans had hardly moved to the east of the *sapta-sindhu* "land-of-the-seven-rivers" region, i.e., Panjab. Chakladar (1928, 1961-62) claims that the Vedic culture originated in the eastern region and that the Rgvedic Aryans had "occupied" the eastern lands during the composition of the *Rgveda*. This is absolutely untenable. The attitude of the Vedic Aryans toward the non-Aryans as seen in the *Rgveda* is also very significant. The general attitude is characterized by a strong hatred toward the non-Aryans, whether they are Panis, Śabaras, or Dāsas; very rarely are there any references to them as friends.[24] The battles with the non-Aryans are called *Dasyu-hattyā* 'slaughter of the Dasyus'.[25] The non-Aryans are hated for being *mūra-deva* 'with dummy gods', *śiśna-deva* 'phallus-worshippers', *adeva* 'godless', etc., and are particularly accused of being *mrdhra-vácaḥ* 'with obstructed speech'.[26] It is unreasonable to think that such attitudes prevailed when the Aryans entered India and yet did not continue up to the composition of the *Rgveda*. These are the attitudes of the Rgvedic poets themselves. How could the Rgvedic poets expressing these attitudes be Sanskrit-speaking Dravidians, assuming that some of the non-Aryans mentioned in the *Rgveda* are in fact Dravidians?

5.6. This does not contradict the existence of several words in the *Rgveda* which can only be explained as loanwords from Dravidian and Munda languages. The loanwords do indicate contact with non-Aryan peoples, something known even from Rgvedic descriptions and which cannot be doubted. But at the same time, these loanwords are not sufficient to indicate the degree of intensity of Dravidian or Munda influence on the Vedic language

which Kuiper would like to see in them. Even if one accepts the entire lists of Rgvedic loanwords provided by Kuiper and Burrow,[27] the total number of these words in the *Rgveda* is still not as great as the number of Indo-Aryan loanwords in Tamil or in Southeast Asian languages. S.Vaidyanathan has put together a list of Indo-Aryan loanwords in old Tamil, and not only do those words show clear signs of Tamilization, but the oldest Tamil grammar, *Tolkāppiyam*, has explicit rules for changing Sanskrit sounds into Tamil sounds.[28] Rarely did Tamil sounds change because of Indo-Aryan loanwords. Ganesan (1971:152) has discussed in detail the sound changes involved in Sanskrit loanwords in Tamil. He remarks: "This [Tamil] phonemic system, which has been fairly well stabilised by the corresponding phonemic orthographic system, makes substantial changes inevitable in words which are borrowed from other languages, especially from a language like Sanskrit, which has a much different phonemic system. Practically whenever a word is borrowed, a phonological change is almost obligatory and the word gets a new form." (Also see Miranda 1977:264).

5.7. Ananthanarayana (1970:66) basically accepts the concept of bilingualism as proposed by Emeneau and Kuiper but derives a slightly different conclusion: "It is suggested that in the first period of this contact bilinguals were recruited chiefly from the native population. Support for such an assumption is provided in the greater number of Sanskrit loans as opposed to an insignificantly small number of Dravidian words in Sanskrit." This would mean that more Dravidians accepted Aryan words than Aryans accepted Dravidian words. This also suggests that the initiative for adoption was more prominent on the part of the native non-Aryan than on the part of the incoming Aryans.

5.8. Kuiper's account of the specific role of bilingualism in the development of retroflexion is somewhat less convincing. He says that the Aryans— bilingual Aryans—recognized a phonemic contrast between dentals and retroflexes in the *foreign language*, and then they—the Aryan bilinguals—interpreted allophones of their Aryan language in terms of the *foreign phonemic system*. Early Aryans, even if there were some bilingual Aryans, most probably did not reinterpret allophones of their own Aryan language in terms of a *foreign phonemic system*. On the contrary, they would have adapted foreign loanwords to their own native Aryan phonology. Kuiper himself (1958: 351) says that there were such "Sanskritizations": "Sanskritization of foreign words by substitution of *tr, dr* (or *rt, rd*) for *ṭ, ḍ* is well attested in the classical language." He (1958:352) carries this tendency further into the *Rgveda*: "The explanation of *kartá-* as a Sanskritization of *kāṭá-* would

seem to be rather the only one that is phonetically admissible according to our present knowledge." If one accepts Kuiper's explanation of *kartá-<kā́ṭá-*, which is by no means certain,[29] it would appear that the Ṛgvedic Aryans did think of *rt* as being more native to the Aryan tongue, and *ṭ* as being somewhat foreign. (I would agree with this inference but would consider *kā́ṭá-* in the *Ṛgveda* as being a post-*Ṛgveda* development in the oral tradition at a period when *rt* and *ṭ* were both a part of the "native system of the redactors.")

5.9. Further support for the implausibility of Kuiper's view may be gained by examining the British treatment of retroflexes in loanwords from Indian languages. "It is no wonder," says G. S. Rao (1954:39), "that he (i.e., an Englishman) wrote and spoke each Indian word as he heard it with his English ears." He points out (p. 47) that "the laws of English phonetic usage operated in the transition of Indian words into English." The British had to use hundreds of local Indian words in English. However, they did not pick up the retroflex sounds, but rather approximated them to other English sounds. Thus, the Marāṭhī place name *puṇe* became "Poona" and *khaḍkī* came to be called "Kirkee." Similarly, the presence of non-Aryan loanwords in the *Ṛgveda* is insufficient to indicate that the intensity of contact with the non-Aryans was sufficient to cause phonetic and phonemic alterations in the Aryan language in that early period. W. J. Gedney's extensive work on "Indic Loan-words in Thai" also indicates that, despite the existence of hundreds of loanwords and a living tradition of Pāli texts, the Thai language did not adopt Indian sounds and that the same is true of Cambodian and Burmese.[30] It may be noted that several words in the *Ṛgveda* claimed by Southworth to be Dravidian loanwords have no retroflexes in their Ṛgvedic form, but their supposed Dravidian cognates do have retroflexes.[31] This appears to me to be the expected direction of change.

5.10. On the other hand, a study of Indian English and English loanwords in Indian languages reveals the other side of the process. When native speakers of Indian languages heard English with their "Indian ears," English alveolars were naturally felt to be closer to Indian retroflexes and were approximated to Indian retroflexes. For example, English 'table' becomes *ṭebal* in Marāṭhī. Also compare other English words in Marāṭhī: 'government' *gavharnmenṭ*, 'bottle' *bāṭlī*, 'taxi' *ṭæksī*, 'post' *posṭ*, etc. T. Grahame Bailey (1938:109) says: "The modern Indian hearing alveolar *t* and *d* considers them cerebrals." Thus, the adoption by Indian speakers of English as a second language has caused changes in English in India, but hundreds of loanwords in British English from Indian languages have not altered the phonemic structure of English as spoken by the British. "The historic statement of the problem of loan phonology is that a speaker of L_T, in perceiving and reproducing the sounds of L_S, substitutes for them those that he takes to be 'closest' in his own language" (Lovins 1974:240).

5.11. However, Emeneau recognized this problem. Instead of saying that Aryans interpreted allophones of Proto-Indo-Aryan in terms of the foreign Dravidian phonemic system, he considers it more logical to assume that the Dravidians interpreted allophones of Proto-Indo-Aryan in terms of their native phonemic system in the process of adopting the foreign Aryan language. In his excellent paper "Bilingualism and Structural Borrowing," as early as 1962, Emeneau (1962a:434) points out that "the evident Dravidianization of Sanskrit in some of its structural features must lead to the partial conclusion that a sufficient number or proportion of certain generations of Sanskrit speakers learned their Sanskrit from persons whose original Dravidian linguistic traits were translated into Indo-Aryan and who provided the model for succeeding generations." Ananthanarayana (pp. 60, 67) essentially agrees with Emeneau and points out that, numerically, more Dravidians than Aryans must have participated in the transmission of the Aryan language, and he refers to the example of retroflexes in Indian English.

5.12. In his 1962 article, Emeneau proposed an essentially correct "sociolinguistic process" for the development of retroflexion in Sanskrit, but he was not sure of the exact chronology or of the intensity of this process with reference to the early Vedic texts. Were Dravidians participating in a significant proportion in the use of Sanskrit in the pre-Vedic times? In 1962 Emeneau (1962a:434) was not sure: "Nothing is known of the Indian social and political structure into which the Sanskrit-speaking invaders made their way or of the changes brought about by incursion, or of the numbers of the invaders, or even how many bands were involved; was there intermarriage of the invaders and the aborigines, or concubinage, or the use of aboriginal nurses? And above all, who were the bilinguals—a significant number of the invaders or of the aborigines or of both? We shall never know the answers to these questions in detail." In 1974, making essentially the same sociolinguistic argument, Emeneau (1974:92) claims more confidently that such a process must have taken place before the composition of the *Ṛgveda*, and agrees with Kuiper that retroflexion in the existing *Ṛgveda* is an indication of pre-Ṛgvedic Dravidianization of the Aryan language.

5.13. In my view, this is the beginning of confusion. I entirely agree with Emeneau that retroflexion in the existing *Ṛgveda* can and must be explained by the Dravidianization of the Aryan language. However, the fact that the present text of the *Ṛgveda* has retroflexion does not at all prove that there

must have been retroflexion in the original compositions of the *Ṛgveda*, and hence does not prove that the original compositions of the *Ṛgveda* must also be posterior to Aryan-Dravidian convergence. The totality of evidence provided by Kuiper for pre-Ṛgvedic "convergence" is, in my opinion, still insufficient to prove that the original *Ṛgveda* was composed by Sanskrit-speaking Dravidians. Even two hundred loanwords, if we accept the entire list of Kuiper, a few non-Aryan sounding names, and an Austroasiatic myth grafted onto the Indra myth, do not prove that the composers of the *Ṛgveda* were already Aryanized Dravidians. Kuiper (1967:87) mentions the Vedic sage Kavaṣa Ailūṣa as a non-Aryan accepted by the Aryans. However, this is not a norm. The *Aitareya-Brāhmaṇa* (2.8.1) shows that initially the Vedic Aryans rejected him by saying: "How could this bastard born of a *dāsī*, a cheat who is not a brahmin be initiated into the sacrifice with us." He was accepted only when he "saw" a hymn. The Southeast Asian languages would definitely compete and fare better in all these respects. Those languages have hundreds of Indic loanwords, entire Hindu and Buddhist religious and cultural systems, and also the living continuity of Pāli texts, and yet these languages did not develop retroflexion. This is a very strong counterexample to Kuiper's claims.

5.14. The difference between the sages who composed the original hymns of the *Ṛgveda* and the editor-redactors of the later Vedic recensions is quite considerable. Oldenberg (1973:39) points out that "in the ancient times for instance, the Aryans of the Northwestern part of further India had not yet entered deep into the borderland by the use of force and were still the brothers and almost neighbours of the Zarathustrian Aryas of Iran, or rather of the Aryans who were opponents of Zarathustra. The situation changed in later times. Hinduism spread all along the peninsula with the Aryan character ever weakening, with the blood of the natives mingling in their blood stream in a never-ceasing continuity and with an infinite series of shades of complexion, ranging from the fair to the dark, observable in the populace....It will not do to mix up the old times with the modern times." He further differentiates the Ṛgvedic Aryans from the later bearers of the Hindu culture: "The linguistic affinities between the Veda and the Avesta...have been compared with the dialectal refinements of the inscriptions of Aśoka; or, if we, on the other hand, compare the Vedic gods with the Avestic gods, or if we compare the Vedic sacrifice, the priests and the special designations of priests with their counterparts in the Avesta, and then, on the other side, if we observe what revolutionary changes have been introduced in the gods and in the sacrifices by the cult of Viṣṇu or Śiva...and how the externals as well as the inner meanings of religion have been profoundly changed...we can say

that there has been here a development corresponding to that between the script of the Aśokan rock-edicts and the present Devanāgarī script" (Oldenberg 1973:34-40). Nothing that Kuiper has come up with can change the picture thus depicted by Oldenberg and turn the composers of the original Vedic hymns into Sanskrit-speaking Dravidians.

5.15. In order to be able to evaluate the arguments put forward by Kuiper to establish "bilingualism" between the Vedic Aryans and Dravidians, we must take into account a recent analysis of bilingualism by Nadkarni (1975: 681), who points out that "structural borrowing at all levels of language, including syntax (the so-called 'deepest' level), can take place irrespective of the factor of social prestige, but solely as a consequence of 'intensive and extensive' bilingualism with a certain time-depth....By 'extensive' bilingualism, I mean a situation in which bilingualism is coextensive with the entire community, as in the case of K[annad] S[arasvat] Ko[nkani] speakers. By 'intensive' bilingualism, I mean a situation in which a community whose mother tongue is language A is not merely conversant with language B, but actually uses it for a wide range of purposes in the course of normal, everyday living. Extensive bilingualism, in particular, seems necessary for structural borrowing to be stabilized, since it renders all the members of the community more or less equally receptive to influences and traits of the non-native language—which, first randomly, and gradually more and more regularly, find their way into their mother tongue. A linguistic innovation has a strong chance of stabilizing itself in a language if it attracts no notice, and therefore no resistance from speakers, particularly in the early stages. This is possible only in situations of extensive bilingualism."

5.16. A more recent study of Konkani loan-phonology by Miranda (1977: 264) asserts: "Konkani dialects in the Dravidian area have been under the influence of the local Dravidian languages not only with respect to vocabulary but also with respect to phonology and syntax. However, they have succeeded to a large extent in molding the Dravidian loan words to their own phonological and morphological patterns." This is an important conclusion. With Nadkarni's precise definitions and with Miranda's conclusions, we must question Kuiper's theory of loan-phonology in the *Ṛgveda*. We must say that the non-Aryan languages were not only not prestige languages for the Aryans, but that the Aryans, by referring to their obscure language (*mṛdhra-vācaḥ*) as they did, hated the non-Aryans. There is no evidence that there existed "extensive" or "intensive" bilingualism with the non-Aryans. Kuiper's data can at best indicate "sporadic" bilingualism, but is utterly insufficient to indicate "extensive" or "intensive" bilingualism as defined by Nadkarni.

Without making distinctions between the different kinds of bilingualism and the differences in their impact, the concept of bilingualism as used by Kuiper not only remains vague but leads to misleading conclusions which are not supported by the cases of loan-phonology referred to earlier.

5.17. The Ṛgvedic Aryans were always conscious of the Aryan-non-Aryan distinction (*ārya-varṇa* versus *dāsa-varṇa*). This unity among the Aryans does not have to be total racial unity, since the Indo-Europeans must have mixed with the local populations of Iran and other countries before they reached India. This unity is more a matter of cultural perception. However, things changed in later times. The original Vedic Aryans settled in northwestern India and gradually expanded to the east and to the south. The original non-Aryan population underwent Aryanization, and the non-Aryan religion and culture were gradually "Sanskritized."[32] Eventually the earlier distinctions lost their value.

5.18. Already in the *Brāhmaṇa* texts, we hear of dark-complexioned Brahmins proving themselves academically superior to the fair-complexioned Brahmins (Chatterji 1962:69-70). The author of the *Mahābhārata* is the dark-complexioned (*kṛṣṇa*) Vyāsa, who is also the progenitor of the Kauravas and Pāṇḍavas, and has himself a non-Aryan mother. It is to him that the Indian tradition attributes the beginning of the process of editing and redacting the Vedas. With the prominence of Kṛṣṇa, the "dark" Lord, the *Mahābhārata* shows the emergence of dark Aryanized non-Aryan personalities in religious and political life.[33]

5.19. The Māṇḍūkeya tradition had reached Magadha in the east by the time Śākalya compiled his recension.[34] Looking at this drastically different sociolinguistic situation, it is not at all surprising to see that the reciters of the *Ṛgveda* at this late "postconvergence" period were influenced by the retroflexion in their own post-Vedic speech. What is in fact more surprising is that, even after such a long time, there were at least some people who doubted the existence of retroflexion in the original text of the *Ṛgveda*.

5.20. Based on the references in the *Brāhmaṇa* and *Āraṇyaka* literature, we may be able to speculate on the possible reasons for this divergence of opinion on the authenticity of retroflexion in Sanskrit. As the Indo-Aryans entered India and moved eastward, it seems that some of them always thought of the "good old days" in the "golden age in the western home-lands," while others gradually accepted the changes that were taking place in their life while they were moving eastward. Thus, in terms of purity of speech, some Aryans kept looking back to the northwestern trails from which they had come. This is clearly supported by the *Brāhmaṇa* statements that

those who want to learn the best speech go to the north(west), since the best known speech is spoken in the north(west).[35]

5.21. On the other hand, there were traditions such as that of Māṇḍūkeya, which had moved eastward as far as Magadha, and which were fighting for the recognition of "new" or "more eastern" features such as retroflexion as a part of the orally transmitted *Ṛgveda*.[36] We know now that Śākalya accepted the tradition of the Māṇḍūkeyas in the matter of retroflexion; and hence, in the text of the *Ṛgveda* as we have it today, the retroflex sounds are there as an integral part of it. It is also important to note that Śākalya did not accept all the conventions of the Māṇḍūkeyas and introduced some new changes. The text of the Māṇḍūkeya recension of the *Ṛgveda* was perhaps somewhat "closer" to the original *Ṛgveda* than was Śākalya's recension.[37] Figure 1 shows the geography of these shifts.
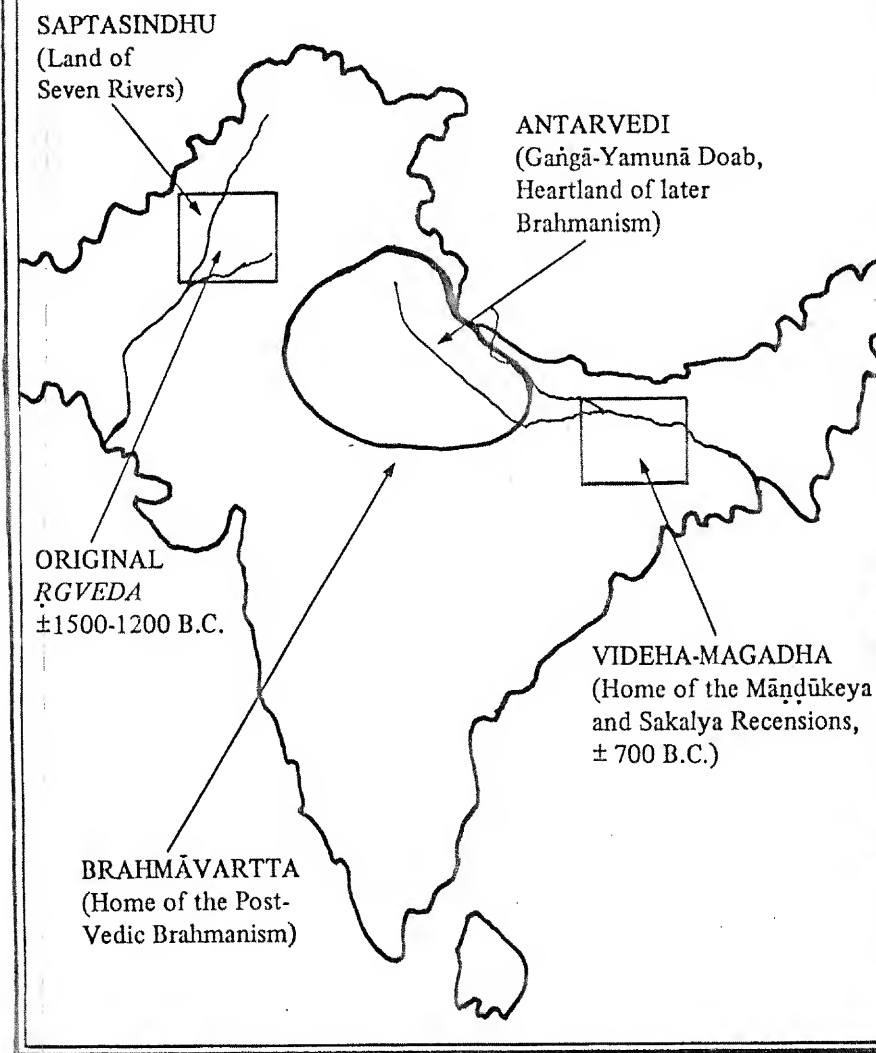
6. EMERGENCE OF RETROFLEXION IN PREHISTORIC INDO-ARYAN

6.1. The fact that the pre-Śākalya tradition of the Māṇḍūkeyas, upon which Śākalya relied for his retroflex sounds, had already reached Magadha in the east, and the fact that the *Kauṣītaki-Brāhmaṇa* (7.6) considers the north-western dialect to be relatively purer are of great significance to the linguistic history of ancient India. At this point, one has to consider the theory of successive migrations of Aryans into India. As I shall demonstrate, this theory is quite relevant to the historical development of retroflexion in Indo-Aryan.

6.2. Hoernle (*A Grammar of the Eastern Hindi*, 1880, pp. xxx-xxxii) postulated the existence of two early Aryan groups in North India, the Māgadhan and the Śaurasenī, representing two waves of Indo-European language speakers, of which the Māgadhans were the older. This idea was supported by Grierson (*Imperial Gazetteer of India*, vol. 1, pp. 353-59) and given an ethnological footing by Risley (*The People of India*, London, 1915, p. 55). In addition to social institutions and languages, the shape of the skull, according to Chanda (1916:59) shows that "the Indo-Aryans of the outer countries originally came from an ethnic stock that was different from the stock from which the Vedic Aryans originated."[38] However, Chanda's "inner" and "outer" are different. For him the second wave of post-Vedic Aryans by-passed the "inner Vedic Aryans" and went into the "outer" regions. For Chakladar (1928, 1961-62), the second wave of post-Vedic Aryans pushed the Vedic Aryans into the "outer" lands and itself occupied the "inner" lands. To me, Burrow's conception of the west to east movement of the two waves of Aryans seems to be more reasonable than the other theories. Oldenberg also supported and elaborated this idea and pointed out that "probably

FIGURE 1

GEOGRAPHICAL LOCATIONS OF THE ORIGINAL *ṚGVEDA*
AND
LATER RECENSIONS

SAPTASINDHU
(Land of
Seven Rivers)

ANTARVEDI
(Gaṅgā-Yamunā Doab,
Heartland of later
Brahmanism)

ORIGINAL
ṚGVEDA
±1500-1200 B.C.

VIDEHA-MAGADHA
(Home of the Māṇḍūkeya
and Sakalya Recensions,
± 700 B.C.)

BRAHMĀVARTTA
(Home of the Post-
Vedic Brahmanism)

the first immigrants, and, therefore, the farthest forward ,to the east...are those tribes...the Aṅga and Magadha, the Videha, the Kosala and Kāśī."[39] He (1882:9) also claims that it was the second wave that produced the Vedas. This theme has been linguistically upheld by Meillet who shows that the Vedic dialect, like the Iranian, is an *r*-only dialect in which the Indo-European **l* merged into *r*, but the dialect of the redactors of the Vedas was an *r* and *l* dialect, where the original Indo-European **r* and **l* were retained; the redactors of the Vedic texts have put this *l* back into some of the Vedic words, where the original Vedic dialect had an *r* (Meillet 1912-13; Bloch 1970:2). In later Prakrits we clearly see the eastern Prakrit, Māgadhī, developing into a pure *l*-only dialect; whereas the western and particularly the north-western dialects, almost devoid of *l*, represent the early *r*-only dialect (Mehendale 1948:297).

6.3. The difference between the *r*-only dialect, the *r-l* dialect (and possibly an *l*-only dialect) is quite significant. Burrow (1972:535), in a recent study, says that "the *r*-dialect prominent in the early Ṛgveda shares a common change (of *s>ṣ*) with Iranian. It is unlikely to have undergone this change independently and consequently we must assume that it took place when a group of Indo-Aryan migrants were still in contact with Iranians....On the other hand, those Indo-Aryans who preserved the distinction between *r* and *l* had already departed to India, and so they were unaffected by it. The speakers of the *r*-dialect were the latest comers on the Indian scene and there ensued a mixture of the two dialects."

6.4. The significance of the *r-l* dialect moving earlier into the interior of India and eventually on to eastern areas like Magadha (where dialectally all *r>l*) is further enhanced by its connection with the operation of Fortunatov's Law. The law states that in the group IE **l* + dental in Sanskrit, the *l* is dropped and the dental is changed to a cerebral (cf. Skt. *paṭa*- 'cloth', OSlav. *platino*, Russ. *polotno*). Here an original Indo-European cluster yields a single retroflex, while *r* + dental in Middle Indo-Aryan always results in a cluster, dental as well as retroflex (cf. Skt. *vartate*, Pkt. *vaṭṭai* beside *vattai*) (Burrow 1972:531). The particular connection of Fortunatov's Law with *l*-clusters means that this Law cannot apply in dialects, such as Iranian and Ṛgvedic Sanskrit, where every IE **l>r*. Burrow (1972:531) has admirably defended Fortunatov's Law against all the objections raised by different scholars and has tried to date the beginning of its operation on the basis of the Ṛgvedic word *gálḍā*- 'dripping, flow', beside the *r*-dialect form *gárḍā*- The fact that *gálḍā*- is still found in the *Ṛgveda*, while later Sanskrit has the derived root *gaḍ*, implies, according to Burrow (1972:542), that "the change according to

Fortunatov's Law took place during the period of early Ṛgveda, so that it was possible for one form antedating that change to be preserved in that collection."

6.5. One could argue in a slightly different way. The Ṛgvedic dialect, as pointed out by Meillet and by Burrow himself, is an *r*-only dialect, like the Iranian, and hence was not logically subject to Fortunatov's Law. Thus, the retroflexes in the existing *Ṛgveda*, which can only be accounted for by Fortunatov's Law, may be viewed as a part of "normalization" by the later redactors belonging to the *r*-*l* dialect in tandem with the replacement of the Ur-Vedic *r* by *l* from their own dialect. This further separates the Ur-*Ṛgveda* dialect from the direct impact of Fortunatov's Law.

6.6. The fact that the *r*-only dialect of the northwest and the *r*-*l* dialect (and possibly the *l*-only dialect) of the northeast underwent different developments with respect to retroflexion can be demonstrated by referring to the early inscriptional Prakrits. In particular, Mehendale's monumental *Historical Grammar of Inscriptional Prakrits* throws a flood of light on this problem. It must be remembered that the major portion of northern India, until this time, had not been invaded by any people other than Indo-Iranians, and hence the linguistic development reflected up to this period is very much an affair of Indo-Iranian and the pre-Aryan languages of India. Mehendale (1948:18) points out that the cerebralization of dentals in the environment of *r* is predominant in the eastern inscriptions, but "it will be observed that the western dialect is the least affected by cerebralisation." Bloch (1970:6) and Burrow (1936:419, 421) also emphasize this point. Burrow (1936:421) further points out that even within the northwestern region, the Niya Prakrit in the further west preserved *r* + dental clusters better than the northwestern Aśokan inscriptions. He concludes that phonologically the language of Niya presents a pronouncedly more archaic aspect than that of Aśoka, namely, by better preserving consonant combinations such as *rt*, *rdh*, etc.(Burrow 1936: 422). Extremely significant is Burrow's final conclusion:

> Obviously we cannot derive the Niya Prakrit from the language of Aśoka, and the most natural conclusion to draw from the fact that phonetically it is better preserved is that its home is to be sought further to the west. Because it seems clearer (then as now) that the more remote a language was in the direction of the North-West the less liable it was to phonetic decay (1936:422).

In a strange way, Burrow's conclusion reads like a translation of the passage from the *Kauṣītaki-Brāhmaṇa* (7.6) discussed earlier.

6.7. It is thus clear that Fortunatov's Law primarily applied to the *r*-*l* dialect (or the *l*-only dialect) of pre-Vedic Aryans who later moved into eastern India and not to the *r*-only dialect of Iranians and Vedic Aryans of northwestern India. Oldenberg discusses in detail the question of the non-Vedic eastern Aryans and says that they confronted the non-Aryans long before the Vedic Aryans did.[40] At this point a discussion of the *Vrātya* Aryans becomes quite relevant. For a detailed discussion of the *Vrātyas* and their eventual assimilation into the later Aryanized society, I shall only refer to the treatment by K. A. Nilakanta Sastri (1967),[41] but I shall quote an important observation by Kimura (1927:26ff.): "The Vrātyas being Aryans outside the Vedic circle always fought against the Vedic Aryans. Therefore, their sympathy naturally tended towards other tribes beside the Vedic Aryans." The *Baudhāyana Dharma-sūtra* (1.1.32-33) gives us a clear idea of how the "Vedic Aryans" viewed the "mixed Aryans" of the "outer" regions: "The inhabitants of Ānartta, of Aṅga, of Magadha, of Saurāṣṭra, of the Deccan, of Upavṛt, of Sind, and the Sauvīras are of mixed origin. He who has visited the countries of the Āraṭṭas, Kāraskaras, Puṇḍras, Sauvīras, Vaṅgas, Kaliṅgas [or] Pranūnas shall offer a Punastoma or Sarvapṛṣṭhī sacrifice [for purification]." Thus the early Aryan dialect of the *Vrātyas* came into closer contact with non-Aryans and this gives us a necessary sociolinguistic motivation for the operation of Fortunatov's law in their dialect. But it must be remembered that this development is essentially different from the history of the Vedic *r*-dialect. In later times, there occurred an obvious dialectal mixture which is reflected in classical Sanskrit.

6.8. The evidence of Prakrit inscriptions is significant in another respect as well. It has been claimed by Burrow (1971:557), quite rightly, that "the cerebral sibilant *ṣ* is differentiated from the other cerebrals in that its ultimate origin goes back to a much earlier date. The development of *s* to *ṣ* (whence Indo-Aryan *ṣ*) is common to Indo-Aryan and Iranian." It may be observed that despite a few cases of *ṣ* as a spontaneous retroflex (cf. Burrow 1971: 557) and a few cases to be derived by Fortunatov's Law (Burrow 1971:543-44), the sound *ṣ* in Sanskrit is primarily an extension of the Indo-Iranian palatal *ś*, itself derived from the Indo-European **s* by the *ruki* rule, and is generally not in any way connected with Fortunatov's Law. This law applies to the *l* dialect of the pre-Vedic eastern Aryans, while the development of the Indo-European **s* into the Indo-Iranian *ś* by the *ruki* rule, essentially a development within the Indo-Iranian *r* dialect, is preserved in the northwestern inscriptional Prakrits.

6.9. It has been pointed out by many a scholar that of all the Prakrits,

only those of the northwest preserve the triple distinction between *ś, ṣ* and *s*.[42] It may be hard to determine whether or not the phonetic development of [ṣ] by an extension of the *ruki* rule had already taken place by the time of the Ur-*Rgveda*. It seems more probable that the western *r*-dialect of the Vedic Aryans had allophones of *s* and *ś* which were reinterpreted later, after the dialect mixture, as a separate phoneme *ṣ* parallel to the retroflexes *ṭ, ḍ,* etc., derived by Fortunatov's Law in the eastern dialect. In the same way, the later Sanskrit rule of *n* > *ṇ* due to preceding *r, ṛ* or *ṣ* may have its origin in the western dialect. This may be one of the reasons why the early western Prakrit inscriptions have *rt, rd,* etc., for eastern *ṭ, ḍ,* etc., but have *ṇ* corresponding to eastern *n* (Bloch 1970:6).

6.10. However, at the time of the composition of the original *Rgveda*, the western dialect of the Vedic Aryans most probably had nothing more than cerebral allophones of *ś* and *n*, and also perhaps of *t, d,* etc., in clusters with *ś*, which were later identified with eastern retroflexes and interpreted as phonemes by the later mixed population. Thus, *ṣ* in the word *deveṣu* comes from an extension of the *ruki* rule in the western Aryan dialect, while *ṣ* in *bhāṣate* is the result of the operation of Fortunatov's Law from an Indo-European cluster *ls*, cf. Lith. *balsa-* 'voice'. While in early stages of Indo-Aryan these two instances of *ṣ* seem to have had two different origins in two different dialects, in later Sanskrit they are interpreted as belonging to the same phoneme.

6.11. A study of inscriptional Prakrits also helps us clear another problem with respect to the existing recension of the *Rgveda*. This is the problem of the origin of the retroflex sounds *ḷ* and *ḷh* for intervocalic *ḍ* and *ḍh* in Śākalya's recension of the *Rgveda*. Most scholars take for granted the existence of these sounds in the *Rgveda*. I have already referred to Vaidya's view that these sounds developed in the southern (Dravidian) recitational traditions. I disagree with this view. I think that like other eastern retroflexes, *ḷ* developed when the Rgvedic recitational traditions moved eastward in North India. Evidence to support this possibility comes from inscriptional Prakrits. Mehendale (1948:11) points out that, in inscriptional Prakrits, the "change -*ḍ*->-*ḷ*- occurs in the non-Western groups." His detailed statement is as follows:

> Medially the change -*ḍ*->-*ḷ*- or -*l*- is found in the East and North (and perhaps in the Center) in the days of Aśoka. It is next noticed in the Western inscriptions in the 1st cent. A.D. and in the Southern group in the 2nd cent. A.D. The change, therefore, seems to have gone from E (and N) → C → W → S (1948:272-73).

This is an extremely important statement. This shows that the change of -*ḍ*- to -*ḷ*- did not occur in the northwestern regions of India at the time of Aśoka or later. Pāṇini, who comes from the northwest and precedes Aśoka by about two centuries, does not have the sound *ḷ* in his Sanskrit. It is also a matter of great significance that his rules concerning the Vedic language do not have any indication of the existence of the sound *ḷ* in the Vedic texts known to him. In fact, in his rules like P.6.3.113 (*sādhye sādhvā sādheti nigame*) and P.8.3.54 (*iḍāyā vā*), he refers to Vedic usages such as *sādha* and *iḍā* without *ḷh* and *ḷ* for the intervocalic *ḍh* and *ḍ*, but the commentators like Bhattojī Dīkṣita quote the examples *sāḷhā* and *iḷā* (*Siddhānta-Kaumudī*:340, 348). It is a matter of great surprise that Thieme does not notice this point in his *Pāṇini and the Veda*. Pāṇini obviously knew Śākalya's *pada-pāṭha*, and hence it is quite surprising to find him not recording the existence of *ḷ* in that text. The *Rgveda-Prātiśākhya* also does not ascribe the sounds *ḷ* and *ḷh* to Śākalya, but it attributes them to Vedamitra (see note 16). Is it then conceivable that the version of Śākalya's *Rgveda* available to Pāṇini did not contain the sounds *ḷ* and *ḷh*? I think that we cannot simply brush aside this possibility.

However, accepting the other possibility that Śākalya's recension could indeed have had the sounds *ḷ* and *ḷh*, we may be able to explain the probable origin of these sounds in the eastern recitational traditions. It is quite possible that the Śākalyas had the sounds *ḷ* and *ḷh* in their own dialect and the question whether they unconsciously introduced these sounds in the orally preserved texts is a legitimate question (see note 16). Yaska is not too far removed from the *pada-kāras* like Śākalya, and he often doubts their *pada*-divisions and proposes his own. Mehendale (1965:13) has given a very convincing argument to prove that Yāska had the sounds *ḷ* and *ḷh* in his own dialect:

> In *Nirukta* 7.16, Yāska cites Rv. 1.1.2 and in *N.* 8.8 he cites Rv. 10.110.3. In both these verses occurs the word *īḍyaḥ* which shows *ḍ* since it does not occur between the two vowels. But while paraphrasing it in his commentary, Yāska uses the form *īḷitavyaḥ* with *ḷ* since here it occurs between two vowels. Had Yāska not used *ḷ* in his speech, he would have paraphrased the Vedic word by *īḍitavyaḥ*.

If this argument is valid, and I think it is, then one may advance a similar argument to indicate a possibility that Śākalya's own dialect also had the sounds *ḷ* and *ḷh*. Sköld has indicated that Śākalya's word text for the *Rgveda*
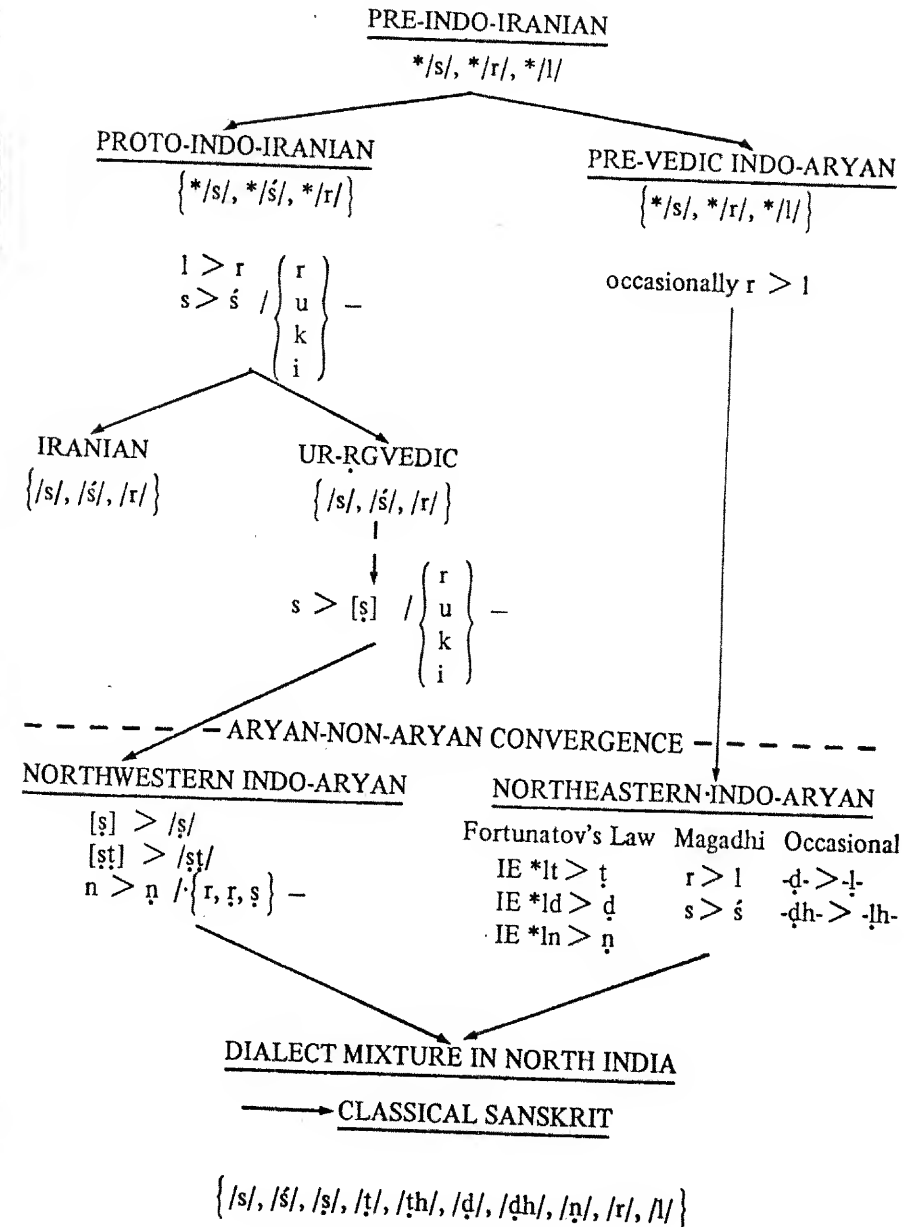
word *vīdvagam* (1.118.9) is *vīḷu-agam* (see note 16). This raises a strong possibility that Śākalya's own dialect had these sounds. The *Aitareya-Āraṇyaka* passage discussed earlier shows that the Śākalya tradition followed the Māgadhan tradition of the Māṇḍūkeyas. The *Bṛhadāraṇyaka Upaniṣad* (3.1-9) has clear indications that Brahmins from the Kuru-Pañcāla region in north-central India were migrating to the eastern regions like Videha, and that a Vidagdha Śākalya was at the court of the king Janaka of Videha. Though the question of identity of this Vidagdha Śākalya with the Sthavira Śākalya of the *Aitareya-Āraṇyaka* and the redactor of the *Ṛgveda* is a matter of dispute (see *Aitareya-Āraṇyaka*, Keith:239ff; and *Vedic Index of Names and Subjects*, Macdonell and Keith:vol. 2, 368-69), the available information is quite sufficient to place the Śākalya tradition in the eastern regions of Videha and Magadha. Considering the above arguments it seems quite unlikely that the Ur-*Ṛgveda* of the northwestern region had the sounds *ḷ* and *ḷh*. Even in later times, there must have been other recensions of the *Ṛgveda* which did not have the change of -*ḍ*- and -*ḍh*- to -*ḷ*- and -*ḷh*-. For instance, while the available recension of the *Ṛgveda* (10.90.5a) reads *tasmād virāḷajāyata*, the *Yajurveda* version of the same hymn in the Mādhyandina recension (31.5a) reads *tasmād virāḍajāyata*. Is it not conceivable that the Mādhyandina reading represents a pre-Śākalya stage in the evolution of the Ṛgvedic oral traditions?

6.12. My interpretation of the phonological details of the early Prakrit inscriptions by itself would not have been sufficient for understanding possible early developments of Sanskrit sounds. But, whatever we know about Vedic, pre-Vedic, and Iranian from other independent sources fits amazingly well with the regional distribution of sounds in the early North Indian Prakrit inscriptions. One may reasonably suspect that this is not due to accident but is the result of natural developments. It seems interesting that the inscriptional Prakrits known from the third century B.C. should reflect a natural development of what we know to have been true of pre-Vedic and Vedic Indo-Aryans, and Iranians of a much earlier period. One of the reasons could very well be that after the arrival of the Indo-Aryans, this region was not seriously disturbed by any peoples other than Iranians until the invasion of Alexander the Great. Figure 2 sums up the results of the preceding discussion of the development of Indo-Aryan retroflexes.

7. *BRĀHMĪKARAṆA*: A GRADUAL TRANSFORMATION

7.1. The passage which is quoted from the *Aitareya-Āraṇyaka* also appears with slight differences in the *Śāṅkhāyana-Āraṇyaka* (8.11). It contains a significant additional statement which throws some new light on the process of

FIGURE 2

editing and redacting the older texts that had just begun in this period. After saying that some people have doubts about the existence of *ṇ* and *ṣ* in the *Saṃhitā*, and after advising that these sounds must be pronounced—as is done in the traditions of Māṇḍūkeya and Śākalya—the *Śaṅkhāyana-Āraṇyaka* (8.11, p. 315) says:

> SIMILARLY, ONE SHOULD RECITE WHATEVER ELSE THERE IS, NAMELY ANY SPEECH, HISTORICAL TRADI-TIONS AND PURĀṆA-TEXTS, ONLY AFTER HAVING THEM TRANSFORMED INTO THE BRĀHMA [SYSTEM].[43]

What is the process that is signified by the gerund *brāhmīkṛtya*? The compound verb *brāhmī-kṛ*, according to the standard rules of Sanskrit, should refer to a process of transforming something which is not *brāhma* into something which is *brāhma*.[44] The word *brahman* is often used in the contexts where its identity with *vāk* 'speech' is clearly expressed (*Aitareya-Āraṇyaka*: 1.1.1, 1.3.1, 1.5.1, etc.). The concrete manifestation of this *brahman* = *vāk* = 'speech' is seen by the *Aitareya-Āraṇyaka* (2.3.6) in terms of individual sounds such as stops (*sparśa*) and sibilants (*ūṣman*). This text uses developed phonetic terms such as *svara* 'vowel', *vyañjana* 'consonant', *sparśa* 'stop', *ūṣman* 'sibilant' and *antaḥsthā* 'semi-vowel'. The term *antaḥsthā* 'semi-vowel', which literally means 'standing in between [vowels and consonants?]' (cf. Pāṇini's *Śivasūtras*), possibly suggests that the formation of an ordered alphabet had already taken place (*Aitareya-Āraṇyaka*: Index 5). The *Aitareya-Āraṇyaka* actually uses the term *akṣara-samāmnāya*, which is the standard technical term for "ordered alphabet" in systematic works on Sanskrit phonetics and grammar.[45] This standardized alphabet, *akṣara-samāmnāya*, is called *brahma-rāśi* 'collection of *brahman* = speech' by the *Prātiśākhyas* and later by Patañjali.[46]

7.2. Thus, the gerund *brāhmī-kṛtya* most probably stands for the gradual process of "normalization" or "standardization" of the older oral texts in accordance with the norms of the Gangetic basin. The connection of this word with the name *brahmāvartta* for the Gangetic basin may be strongly suspected. This region becomes the home of standard speech by the time of the *Āraṇyaka*s, in contrast to the northwestern frontier of India which was the homeland of the Ṛgvedic Aryans. Even Yāska seems to use the word *ārya* in a somewhat regional sense, i.e., inhabitants of *Āryāvartta* (often called *Brahmāvartta*), whose linguistic habits he distinguishes from those of *Kamboja* 'Eastern Iran, Western Punjab', *Surāṣṭra*, etc.[47] Patañjali also discusses

the concept of standard speech, and defines it as the speech of the learned Brahmins of *Āryāvartta*.[48] Thus, it may be said that in the early centuries of the first millennium B.C. there took place in north-central India a gradual process of *brāhmīkaraṇa* 'normalization and standardization' of the older oral texts in accordance with the norms of *Brahmāvartta*. The location of this region also explains how, by this time, there had occurred a mixture of north-western and northeastern dialects in an essentially north-central region.

7.3. This process of "normalization" or "standardization" of orally preserved ancient texts is quite similar to what happened to the originals of the Sangam works which were composed in Ancient Tamil during the first three centuries after Christ, but which had their language altered and are now found in Cen-Tamiẓ redactions which must date from about 600 A.D. and later. Chatterji, who talks about this normalization, also speaks of a similar normalizing transformation in the case of the Vedic literature from its composition to its present preserved form and mentions several other cases of such transformations in the process of oral transmission.[49]

8. RETROFLEXION AND THE DEVELOPMENT OF THE BRĀHMĪ SCRIPT

8.1. In the context of the process of *brāhmī-karaṇa*, it is important to look at the origin and development of the Brāhmī script. Bühler (1895:84-85) has convincingly demonstrated the derivation of the Brāhmī script from Phoenician signs, and recently this has been supported by Dani and Mahadevan.[50]

8.2. The highly probable Phoenician origin of the Brāhmī script raises some interesting questions. The *Ṛgveda* speaks of a non-Aryan community called Paṇi, which is hated by the Aryans for being foolish, faithless, having obstructed speech and not worshipping the Aryan gods like Indra. But at the same time they are described as being well-established merchants who were rich and went in caravans and who undertook sea voyages for trading and gain (Rahurkar 1974:43ff.). Some scholars have identified the Paṇis of the *Ṛgveda* with the Phoenicians (Rahurkar:45-46; S. R. Rao 1972-73:6). At present, there is not sufficient evidence to establish such an identification, but the plausibility of the identification cannot be easily denied. In any case, the Phoenician language did not have retroflexion and hence could not have affected Aryan speech directly in that respect. The Phoenician language does have a contrast of emphatic and nonemphatic dental stops and sibilants, but the development of the Brāhmī script shows that Indians did not look upon these emphatic dentals as retroflexes.

8.3. It is interesting to see how the retroflex Sanskrit sounds could have

gradually been represented through modification of the Phoenician signs for dentals. Sir Alexander Cunningham remarks that "it seems not improbable that this old Indian alphabet, when it was framed or adopted, did not possess any retroflex letters."[51] The Phoenician *Samech* is the origin of the signs for both *s* and *ṣ* in the Brāhmī script. Bühler (1895:66) points out that a single sign probably served in the beginning to express both *s* and *ṣ* and that two separate signs were developed later out of this original representative of the Phoenician *Samech*. Similarly, the signs for the sounds *ṭ, ṭh, ḍ, ḍh* and *ṇ* in the Brāhmī script are derived from the dental signs in the Phoenician alphabet (Bühler:73). While the Brāhmī *ḍ* comes from *d* (*dh* Phoenician *daleth*), the sign for retroflex *ḷ* is a further modification of the sign for *ḍ* (Bühler: 77). The following chart shows the derivation of the Brāhmī retroflex signs (Bühler:82-83):

Phoenician	Brāhmī	Brāhmī Derivatives
Daleth ⟶	dh ⟶	ḍ, d $\begin{cases} dh \\ ḷ \end{cases}$
Theth ⟶	th ⟶	th, ṭ
Nun ⟶	n ⟶	ṇ
Samech ⟶	ṣ (Bhattiprolu type) ⟶	s, ṣ

Even if we do not believe in the Phoenician origin of the Brāhmī script, still the relatedness of its retroflex and dental signs is quite significant in itself.

8.4. The fact that the same sign was earlier used for *s* and *ṣ* and that two different signs were later developed from this common sign is quite interesting. As the Sanskrit grammarians teach, the sound *s* changes to *ṣ* under the influence of the preceding *i, u, ṛ, e, ai, o, au, k*-series, *r*, or *ḷ*.[52] It is quite possible that originally *ṣ* was looked upon only as an allophone of *s* and was not distinguished from *s* in writing. Gradually as *ṣ* became phonemically different from the original *s* through changes in its distribution, *s* and *ṣ* came to be distinguished in writing. The derivation of the Brāhmī *ṣ* from *s* perhaps goes hand in hand with the phonemic evolution of *ṣ* from *s*. The derivation of the Brāhmī sign for *ḷ* from *ḍ* may indicate a similar evolution.[53] Bühler has amply demonstrated that Indian grammarians and pho-

neticians must have been involved in the formation of the Brāhmī script. Since the formation of an *akṣara-samāmnāya* 'standard alphabet' had already taken place before the *Aitareya-* and *Śāṅkhāyana-Āraṇyaka*s and since this very *Śāṅkhāyana-Āraṇyaka* speaks of the process of *brāhmī-karaṇa*, we may be able to conclude with some justification that the process of *brāhmī-karaṇa* referred to here was the gradual process of "normalizing" and "standardizing" the orally preserved ancient texts and involved the phonetic and orthographic realignment of the older texts.

8.5. In terms of the development of ancient Indian scripts and retroflexion, it may be interesting to refer to S. R. Rao's recent attempts to decipher the Harappan script. While most of the recent Western attempts (cf. Parpola 1975) presume that the Harappan language is an old Dravidian language, S. ⁓. Rao's alphabetical interpretation of the late Harappan inscriptions is iṭ eresting in that, according to his findings, the Harappan script, like the later Brāhmī script, is derived from the Phoenician alphabet, and the Harappan language turns out for him to be a form of (pre-Vedic?) Indo-Aryan. According to him, there are no signs for the retroflex sounds *ṭ, ṭh, ḍ, ḍh,* and *ṇ*, but there are signs for the sounds *r, ṛ,* and *ḷ.*[54] This, surprisingly, resembles the phonetic system of the pre-Vedic Indo-Aryans which I have already discussed.

I claim to be a perfect nonexpert with respect to ancient scripts and cannot possibly evaluate the validity of S. R. Rao's decipherments. At least there is a chance that, if S. R. Rao is right, there did exist an Aryan language in India, closely allied to the known Vedic language, and yet did not have any retroflexion. This is at least a possibility, and at the very least a check against instinctively reading a form of Dravidian into the Harappan inscriptions, as is being done quite frequently in recent years.[55]

9. INSTABILITY OF POST-VEDIC RETROFLEXION

9.1. Coming down to post-Vedic times, one finds that the sounds *ṇ* and *ṣ* continue to be intriguing even after the time of Śākalya. Pāṇini, who refers to Śākalya as an authority, has rules dealing with *ṇ* and *ṣ*, in particular, which show us that these sounds were still among the least predictable in Sanskrit. The whole distinction of *ṇopadeśa* and *ṣopadeśa* verbs in Pāṇini testifies to this complexity.[56] In simple terms, the distinction worked in this way: the sound *n* of roots sometimes changed to *ṇ* after *r, ṛ,* and *ṣ* in the prefix (*upasarga*), but sometimes it did not change. Pāṇini knew where the change took place and where it did not, but he could not find any general phonological or morphological condition that would distinguish these two classes of verbs

from each other. In fact, he had to identify every such item which underwent such a change individually. For example: *nṛtyati/pranṛtyati*, but *namati/praṇamati*. The same situation existed in roots with *s*. This either changed to *ṣ* or remained *s*. For example: *sīdati/viṣīdati*, but *sarpati/visarpati*. Even Patañjali could provide only a partial generalization for these cases.[57]

9.2. An instance of "right" and "wrong" speech given by Patañjali shows that retroflexion was fluid in the speech of even upper-caste learned people. He narrates the story of two sages who were called Yarvāṇa and Tarvāṇa (MB: vol. 1, sec. 1, p. 56). They were so called because instead of pronouncing the Sanskrit sequences *yad vā naḥ* and *tad vā naḥ* correctly, they used to pronounce these as *yarvāṇa* and *tarvāṇa* in everyday speech, but as *yad vā naḥ* and *tad vā naḥ* when they were either teaching or sacrificing. This story illustrates how, in these post-Vedic times, there was a situation where even the learned Brahmins were involved in diaglossia.
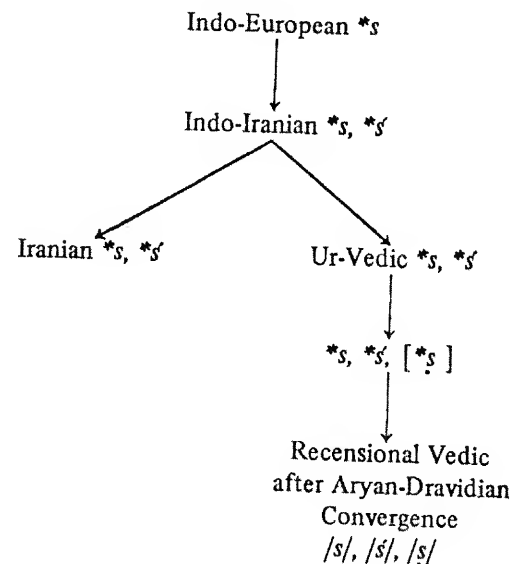
9.3. In order to explicate further the relationship of retroflexes to dentals and palatals in Sanskrit, it may be observed that there is a hierarchy of phonological features. The following examples illustrate the presence and absence of such hierarchies. In Sanskrit, a voiced stop, followed by an unvoiced consonant, becomes unvoiced, e.g., *dt>tt*. However, an unvoiced stop, followed by a voiced consonant, becomes voiced, e.g., *td>dd*. This general rule, which operates only in the specified direction, indicates that the features of [+ voice] and [− voice] are of equal strength in the context of assimilation. On the other hand, the dental, palatal, and retroflex sounds show a clear hierarchy. Pāṇini's rule 8.4.40 (*stoḥ ścunā ścuḥ*) says that a dental stop or sibilant is replaced by the corresponding palatal stop or sibilant *if followed or preceded by* a palatal stop or sibilant, e.g., *tat + ca>tacca*.[58] A palatal never becomes a dental. Pāṇini's rule 8.4.41 (*ṣṭunā ṣṭuḥ*) says that a dental stop or sibilant is replaced by the corresponding retroflex stop or sibilant *if followed or preceded by* a retroflex stop or sibilant, e.g., *rāmas ṭīkām>rāmaṣṭīkām, ṣaṭ nagaryaḥ>ṣaṇṇagaryaḥ*. A retroflex consonant never becomes dental. Similarly, there are rules to change palatals into retroflex consonants, e.g., *viś + ta>viṣṭa, rāj + bhiḥ>rāḍbhiḥ*, but no retroflex consonant is ever changed into a palatal. This gives us a hierarchy of dental>palatal>retroflex, such that there are no changes in the reverse direction.

9.4. The first half of this hierarchy is to some extent part of the Indo-Iranian heritage, while retroflexion is the added "marked" higher feature of Indian origin. Acutally the Indo-European *ruki* rule which yields the Indo-Iranian *ś* from the Indo-European **s* has been partly extended in Sanskrit to *ṣ*. The *ruki* rule says that the Indo-European **s* is changed to *ś*, if preceded

by *r, u, k,* or *i*. This particular rule ceases to be productive in Indo-Aryan, except as an extension to the derivation of retroflex *ṣ*. Pāṇini's rules 8.3.57 and 8.3.59 (*iṇkoḥ, ādeśa-pratyayayoḥ*) say that *s* which is either a substitute or a part of an affix is replaced by *ṣ*, if it is preceded by *i, u, ṛ, ḷ, e, o, ai, au, h*, semi-vowels, or one of the *k*-series, e.g., *deve + su >deveṣu*. The statement of the rule by Pāṇini is basically the same as the *ruki* rule if we understand the following relationships between different conditioning sounds:

$$s>ṣ \ / \ \begin{Bmatrix} r \\ u \\ k \\ i \end{Bmatrix} - \quad \begin{matrix} r \text{ covers } ṛ \text{ (and perhaps } ḷ, ḹ) \\ u \text{ covers } o, au, \text{ and } v \\ k \text{ covers the } k\text{-series of stops} \\ i \text{ covers } e, ai, \text{ and } y \end{matrix}$$

For several of these conditioning sounds, there are no examples found in Sanskrit, and in the Pāṇinian group-symbols *i-N* and *kU*, several "unused" sounds are included. But the basic structure is the same as the *ruki* rule. This shift of the same basic *ruki* rule to retroflexion, a partial shift producing a split between *ś* and *ṣ*, shows the process of realigning the original Indo-Iranian nonretroflex sounds in terms of Dravidian influence on Indo-Aryan. This shift was by no means either complete or regular even by the time of Pāṇini (8.3.57ff).

Indo-European **s*

↓

Indo-Iranian **s, *ś*

Iranian **s, *ś*   Ur-Vedic **s, *ś*

↓

*s, *ś, [*ṣ]

↓

Recensional Vedic
after Aryan-Dravidian
Convergence
/s/, /ś/, /ṣ/

9.5. Though Hans Hock (1975:101-2) points out that retroflexion is "a natural, phonetically well-motivated phenomenon, found, at least dialectally, in the majority of the sub-branches of Indo-European," I would still agree with Kuiper (1967a:104) that "the assumption of retroflex phonemes for proto-Indo-Iranian is fully unwarranted. In old Iranian such retroflexes are entirely lacking, and in Indo-Aryan the genesis of these phonemes is in all likelihood a comparatively late process which must have taken place in the separate branch owing to foreign influence in the Indian linguistic area." At the same time, it must be emphasized that such foreign influence cannot be evidenced for the *Ṛgveda* (also see Hock:113-14) apart from some loanwords. Extension of the *ruki* rule to yield retroflex *ṣ* marks the beginning of *ṣ* in Sanskrit, but this extension had not begun by the time of the Ur-*Ṛgveda*. As we shall see in the following sections, the same must be true of Fortunatov's Law and Burrow's "spontaneous cerebrals" (Burrow 1972).

10. IRREGULAR RETROFLEXION IN THE VEDIC RECENSIONS

10.1. An examination of the present text of the *Ṛgveda* reveals certain aspects of retroflexion in that text which could have come about only through unconscious shifts and mechanical nonlinguistic application of the retroflexion rules by the early preredaction reciters and preservers of the Vedic texts. A few examples will suffice to clarify this point.

10.2. In classical Sanskrit as codified by Pāṇini, the change of *n* to *ṇ* and *s* to *ṣ* is specifically limited to occurrences of both the conditioning sound and the substituendum *n* or *s* within the same *pada* 'inflected word'. For instance, we have **rāmena>rāmeṇa* because both *r* and *n* are parts of the same inflected word; but we cannot have the sequence of the two words *tatra na* changed to **tatra ṇa*, because the sounds *r* and *n* belong to two different inflected items. The same is true of the change of *s* to *ṣ* when preceded by *iN* sounds (all vowels [except *a* and *ā*], *h*, and semi-vowels) and the *k*-series of stops. For instance, in *rāme + su* the sound *s* changes to *ṣ* and we get *rāmeṣu*; but we cannot get this change in cases like the sequence *rāme supte*, where *e* in one word is followed by *s* in another word. Thus, these rules in the normal language are not simply conditioned by the "absolute sound sequence," but by further morphological considerations. This seems to be quite natural; for instance, the Indo-European *ruki* rule is conditioned by sound sequence and morphology both, and not simply by the sound sequence alone.

10.3. However, if we look at the present text of the *Ṛgveda*, we find changes like the ones mentioned above taking place even when the condition-

ing sound belongs to a different word. All that seems to matter is the sound sequence within a metrical foot (*pāda*). A metrical foot is looked upon as if it is a continuous sequence, and the awareness of word boundaries is dispensed with in making changes like *n>ṇ* and *s>ṣ*. We find compounds in Vedic illustrating this kind of change, i.e., *agni-somau (agni-somau)*.[59] One may perhaps understand the "psychological propinquity" involved in a compound, though this propinquity is not exhibited in classical Sanskrit. However, in Vedic even words which are uncompounded undergo changes of this type quite often, i.e., *mo ṣu ṇaḥ* (from *mā u su naḥ*).[60] Pāṇini himself is quite aware that the metrical foot, not the word, is the unit used as the basis of these changes (*antaḥ-pādam*).[61] If we were to say that this kind of change, based on metrical units and their assumed indivisibility rather than on word units, was quite normal in the real Vedic spoken language, then we are faced with a precarious situation. We would have to assume that the scope of retroflexion in the real spoken Vedic language was far greater than in classical Sanskrit. This would be quite contrary to the generally seen pattern of steadily increasing strength of retroflexion, along with the increasing intensity of the Aryan-Dravidian convergence.

10.4. To me it appears that this kind of retroflexion appearing in the preserved Vedic recensions must be ascribed to the effect of recitation. There was a gradual development of conditioned and spontaneous retroflexion in the spoken language of the reciters. The rules which in the real language were conditioned by particular sound sequences and limited in scope to the grammatical word were mechanically applied by these preserver-reciters to the orally preserved archaic texts wherever the sequence conditions were met. The metrical units of the Vedic recensions were viewed by the early reciters as undivided continuous units, and along with this notion of continuity the increasingly archaic nature of the texts helped such unconscious mechanical application of retroflexion rules. Ghatage (1962:93) says: "The sentence or word-group as the basis of Sandhi explains the change of *n* to *ṇ* and of *s* to *ṣ* even when the retroflex sound is found in another word, (*ni ṣasāda, pra ṇa āyūṁṣi*)." Without the sociohistorical background given above, Ghatage's statement is not an "explanation," but merely a statement of obvious facts.

10.5. Thus, a majority of the cases of retroflexion seen in the preserved Vedic texts must be ultimately ascribed to the gradual unconscious change in oral recitation. Such mechanical application of retroflexion rules was again not quite uniform.[62] That the emergence of retroflexion itself was not quite uniform can be seen from Pāṇini's retroflexion rules. Pāṇini himself notes that some of the retroflexion rules applied only as unconditioned options in

certain Vedic texts. Thus, the same Vedic text shows *agnis tvā* and *agnis te*, but also *agniṣ ṭvā* and *agniṣ ṭe*.[63] Once personalities like Śākalya and Māṇḍū-keya had fixed the texts of their respective recensions, the orally preserved texts were as if quickly frozen with all the changes that had taken place so far, and then texts like *Prātiśākhyas* were composed to describe in detail the features of these "frozen" texts. Staal (1967:17) rightly points out that the *Prātiśākhyas* were "not interested in the Vedic language as such, *but in the utterances handed down*" by the oral tradition. However, phenomena like retroflexion had set in before the process of "text freezing" had begun. The same phenomenon is seen in the application of other *sandhi* rules in the preserved recensions.

10.6. In order to emphasize the point that the Ṛgvedic hymns were preserved for a long time as "continuous" archaic sequences and not as spoken sentences, I shall give a few examples which indicate that Śākalya, Yāska, and other ancient Vedic scholars who received the ancient "unanalyzed" continuous texts from the older oral traditions often could not agree on what the words were in a given sequence. All these instances are discussed by Bishnupada Bhattacharya (1958:9-23):

Ṛgveda Sequences

1. *vāyaḥ* ──────── Śākalya   /vā/yaḥ/
                            Yāska   /vāyaḥ/

2. *māsakṛt* ──────── Śākalya   /mā/sakṛt/
                             Yāska   /māsa-kṛt/

3. *mehanā* ──────── Śākalya   /mehanā/
                            Gārgya   /mā/iha/nā/

4. *tṛṣṇaje* ──────── Śākalya   from *tṛṣṇa-ja-*
                            Yāska   dative of *tṛṣṇaj-*

5. Śākalya's analysis: *katham/rasāyāḥ/antaraḥ/*
    Yāska's analysis: *kathaṁ-rasā/yā/antaraḥ/*

These examples show quite clearly that Śākalya, Yāska, Gārgya, and other ancient Vedic scholars were all dealing with orally preserved continuous texts and therefore the "words" in these "continuous texts" were essentially a

matter of scholastic analysis and reconstruction. Twenty-eight pages of "false divisions and patchwords" in the second volume of *Vedic Variants* (3.66-94) substantially prove that preservation of the Vedic literature in the preredaction and preanalysis period was anything but perfect. All the austere methods of oral preservation like *krama-pāṭha, ghana-pāṭha*, etc., depend on the *pada-pāṭha* 'the word-text'.[64] But if Śākalya, Yāska, and Gārgya often could not agree with each other on what the exact words in the orally preserved continuous texts were, we can hardly imagine that the early oral traditions had the same austerity. Rather, they were very much "natural" ways of passing on an oral text from generation to generation. Therefore, the later austere methods could not have preserved what was lost before those methods themselves came into being.

10.7. Irregular, indeed, is retroflexion in the *Ṛgveda* sequence *mo ṣu ṇaḥ*. However, it is irregular not only with respect to the classical language, it is irregular within the *Ṛgveda* itself as it has been handed down to us. Below I shall mention instances of irregular "spontaneous" *n/ṇ* variation within identical texts. These cases are collected from *Vedic Variants* (vol. 2, pp. 444ff.).

Texts*

RV, AV, TS, TB	*pra ṇo*	beside	*pra no*
SV, MS, AB	*pra ṇa*	beside	*pra na*
MS	*nakir ṇu*	beside	*nakir nu*
TS	*svar ṇa*	beside	*svar na*
KS	*indra eṇam*	beside	*indra enam*
VS, MS	*pari ṇo*	beside	*pari no*
MS	*uruṣyā ṇo*	beside	*uruṣyā no*

Similar cases of "spontaneous" *s/ṣ* variation occur (*Vedic Variants*:vol. 2, pp. 447ff.):

---

* *AB—Aitareya-Brāhmaṇa; ApS—Āpastamba-Śrautasūtra; AV—Atharvaveda; HG—Hiraṇyakeśī-Gṛhyasūtra; KS—Kāṭhaka-Saṁhitā; MS—Maitrāyaṇī-Saṁhitā; RV—Ṛgveda; SV—Sāmaveda; TA—Taittirīya-Āraṇyaka; TB—Taittirīya-Brāhmaṇa; TS—Taittirīya-Saṁhitā; VS—Vājasaneyī-Saṁhitā.*

Texts

RV	dhanuṣ ṭanvanti	beside	dhanus tanvanti
SV	svasuṣ ṭamaḥ	beside	svasus tamaḥ
TS	agneṣ ṭvāsyena	beside	agnes tvāsyena
KS, TA	tābhiṣ ṭvām	beside	tābhis tvām
SV	prabhoṣ ṭe	beside	prabhos te
TS, TB	bṛhaspateṣ ṭvā	beside	bṛhaspates tvā

These are only a few cases cited from the long lists of variants in *Vedic Variants*. The only explanation which Bloomfield and Edgerton (p. 444) could come up with is that "the greater degree of psychological propinquity between the alterant sound and *n*, the greater is the likelihood of lingualization." But free variation within the same texts and between different texts only suggests that this "psychological propinquity" was very much a matter of the reciters' psychology and unconscious phonological inclinations.

10.8. We also have occasional free variation in certain other retroflexes in the Vedic texts (*Vedic Variants*:vol. 2, pp. 87ff):

Texts

SV	avaṭasya	beside	avaṭasya
HG	manthakālo	beside	maṇḍakālo
KS	paṇyāt paṇyatarā	beside	paṇyāt paṇyatarā
ApS	padbhiḥ	beside	padbhiḥ
KS	rāvat	beside	rāvaṭ
KS	vikirida	beside	vikiriḍa

When it comes to such unconditional variation in the same text, Bloomfield and Edgerton (p. 444) remark: "The school tendencies which appear are capricious and unstable; one sometimes has a feeling as if Taittirīya texts, in particular, took a perverse delight in violating their own general principles." I believe I have given sufficient evidence to prove my point that the pre-redaction oral traditions were extremely irregular, imperfect, flexible and, therefore, ironically, more "natural" to ancient oral literature, and that a major amount of the phonetic "information" which we find in the existing Vedic recensions can hardly be considered to represent the original compositions.

10.9. This discussion agrees well with Burrow's excellent demonstration of the gradual increase of "spontaneous cerebrals" in Sanskrit. As Burrow

(1971:558-59) convincingly claims: "Spontaneous cerebralization has taken place in Sanskrit on quite a massive scale. Previously the view had been that cerebrals arose in Indo-Aryan only as a result of combinatory changes (though a few cases of spontaneous change had been admitted as exceptions), but it is now clear that this development has frequently taken place without the presence of any such influence." However, as Bloch (1970:128) points out, the spontaneous cerebrals are extremely rare, if any, in the *Rgveda*, but the "list starts getting longer the moment we reach the ancient most period of classical Prakrit." We can compare several *Rgveda* words with later Sanskrit words:

Rgveda	Classical Sanskrit
dī-	dī-
āti-	āṭi-
atati	aṭati
cat-	caṭ-
udumbara	uḍumbara
methī	medhī
nada	naḍa
suvenī	suveṇī
bhanati	bhaṇati

As Abhyankar points out, the Taittirīya reciters occasionally pronounce *ṇ* in the place of *n* "without any reason" (cf. *enāḥ/eṇāḥ* and *agniḥ/agṇiḥ*), and that this practice was noticed by Bhartrhari as early as 400 A.D.[65] This process of unconscious "traditional" and spontaneous cerebralization was noticed by Patañjali (MB:vol. 1, sec. 1, p. 62) when he said that one must make a complete listing of all nominal stems so that one may know the correct pronunciation and not mispronounce the correct words *śaśa* and *palāśa* as *śaṣa* and *palāṣa*.

10.10. As Emeneau (1974:97) points out, Burrow's spontaneous cerebrals can be best explained on the sociolinguistic assumption of the increasing adaptation of Indo-Aryan by native Dravidian speakers to their own phonological system. This process is much more evident in the development of Prakrits, and Ananthanarayana (p. 67) rightly says that "retroflex consonants become much more frequent in the Prakrits as compared to Sanskrit which may have happened due to deeper contact of Dravidian with them." A gradual conversion of a large Kannada-speaking region to Marathi, without any shifting of the original Dravidian population, has been discussed by Joshi in

his exciting book *Marhāṭī Saṁskṛti: Kāhī Samasyā* [Marāṭhī culture: some problems], with an English subtitle: "A New Approach to the Dravidian Problem" (Poona, 1952).

11. RETROFLEXION IN THE *PRĀTIŚĀKHYAS*

11.1. As has been noted earlier, no *Prātiśākhyas* consider r and ṛ to be retroflex sounds (*mūrdhanya*), and to find them classified as retroflexes we have to come down to such late texts as the *Pāṇinīya-Śikṣā*.[66] What is of interest is the fact that even those texts which do not classify r and ṛ as retroflexes still have the rule which says that a dental n becomes retroflex ṇ if preceded by r and ṛ. If we look at the late texts such as the *Pāṇinīya-Śikṣā*, where r and ṛ are explicitly classified as retroflexes, the rule

$$\text{(A) dental } n > ṇ \quad / \quad \left\{ \begin{array}{l} r \\ ṛ \quad \text{all three retroflexes} \\ ṣ \end{array} \right\} \quad —$$

appears to be a phonologically *natural rule* of contiguous or noncontiguous assimilation as the case may be.[67] But if we look at the older classifications of r and ṛ in the *Prātiśākhyas*, the rule does not seem to be as natural as it appears in later times. The *Ṛgveda-Prātiśākhya* (1.8, 10) classifies ṛ as a *jihvā-mūlīya* 'produced at the root of the tongue (velar or perhaps uvular?)', and r as *danta-mūlīya* 'produced at the root of the teeth (alveolar)'. Thus, the rule for the *Ṛgveda-Prātiśākhya*, considering that the t-series for the *Ṛgveda-Prātiśākhya* is alveolar, may be stated as follows:

$$\text{(B) alveolar } n > \text{retroflex } ṇ \quad / \quad \left\{ \begin{array}{l} \text{velar } ṛ \\ \text{alveolar } r \end{array} \right\} —$$

The *Ṛktantra* (2.1.4, 7, 8) classifies ṛ as a *jihvā-mūlīya* 'velar', and r as either a *dantya* 'dental' or *danta-mūlīya* 'alveolar' sound. The *Taittirīya-Prātiśākhya* (2.18, 41) classifies ṛ as being produced at the upper back gums and jaws, while r is an alveolar. For the *Śaunakīya Caturādhyāyikā* (1.20, 28) and *Vāja-saneyī-Prātiśākhya* (1.65, 68), ṛ is velar and r is alveolar. However, for all these texts, the t-series is a dental series, in contrast to the *Ṛgveda-Prāti-śākhya*. Thus, we may write a rule to cover all these classifications:

$$\text{(C) dental } n > \text{retroflex } ṇ \quad / \quad \left\{ \begin{array}{l} \text{velar } ṛ \\ \text{upper back gums } ṛ \\ \text{dental } r \\ \text{alveolar } r \end{array} \right\} —$$
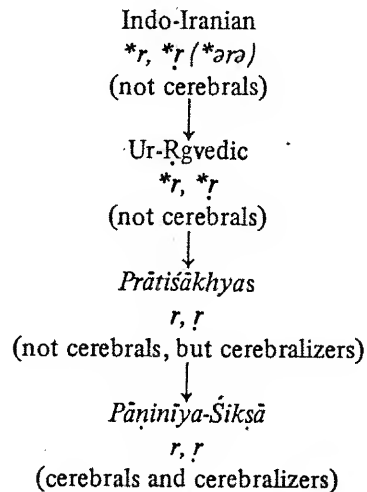
11.2. Looking at all these nonretroflex classifications of the sounds r and ṛ, and the fact that all of these texts do have the rule prescribing the change of n > ṇ, one must conclude that this is phonologically an unnatural process, at least on the surface. How can a nonretroflex sound such as r or ṛ cause the change of a dental n to a retroflex ṇ? We may hypothesize that even though different texts do not exactly consider r and ṛ to be retroflexes, still there must be something in common between a strict retroflex sound and alveolars and velars. It may be that in all variant classifications of r and ṛ, there is some degree of tongue-raising involved, if not retroflexing in the strict sense, and this tongue-raising may be considered to be the factor leading to the change of n to ṇ. Thus, this case of assimilation may be natural not so much in terms of "the point of articulation," but in terms of a somewhat similar manner of tongue-raising producing a somewhat similar acoustic quality.

11.3. This point needs some elaboration. In the ancient Sanskrit phonetic texts, we find that the Indian phoneticians considered articulatory process, as well as acoustic quality, while explaining interrelations of sounds. According to them, there was definitely something common to r and ṛ, despite the difference of the point of articulation as described by them. This common factor is designated as *ra-śruti* 'sound heard as r' by Patañjali.[68] Similarly, the consonant l and the vowel ḷ were said to have a common *la-śruti* 'sound heard as l'.[69] The term *śruti* 'heard sound' makes it clear that these statements refer to the acoustic common factor between r and ṛ, and l and ḷ. These statements of Patañjali are based on the older statements of the *Prātiśākhyas* where the constitution of the vowel ṛ is explained as əɾə, a sequence of a vocoid plus a consonantal r followed by a vocoid. For instance, a text such as the *Ṛgveda-Prātiśākhya* (13.14) classifies ṛ as a velar vowel, and r as an alveolar consonant, but it maintains at the same time that ṛ contains an r. (The mutual relationship of the Sanskrit velar ṛ and alveolar r might have been similar to the premodern Polish velar and palatal l. But the "velar l" of Polish is [w]—it has no lateral color at all anymore—and the "palatal l" is [l]—it no longer has any palatality.) The close relationship between r and ṛ may explain the common functional load of these two sounds in conditioning the change of n to ṇ.

11.4. It is important to realize that despite the variations in the phonetic

classifications of *r* and *ṛ* in different texts, these sounds had the same functional load in all the known grammatical systems of Sanskrit, and this functional load was shared in common with the sibilant *ṣ*, which is classified by all the known Sanskrit phonetic treatises as a retroflex. Thus, we may say that there was all along a kind of phonological retroflexion shared by *r*, *ṛ*, and *ṣ* in all the known grammatical texts, despite the differences in exact phonetic classifications. As far as the change of *n* to *ṇ* was concerned, this phonological retroflexion was the most dominant factor.

11.5. This "phonological retroflexion" may be viewed in a functional sense in that all three sounds *r*, *ṛ*, and *ṣ* are "cerebralizers," if not all cerebrals themselves in the view of the *Prātiśākhya*s. In later texts such as the *Pāṇinīya-Śikṣā*, both *r* and *ṛ*, along with *ṣ* are classified as retroflexes, and thus all of them become "cerebralizers" and cerebrals. This "development" may be viewed as a phonetic development, but at the same time one may speculate that the phonological behavior of these sounds—their phonological or functional retroflexion—may have at least partially contributed to this phonetic shift. Thus, we find that the phonological requirements in Pāṇinian grammar are greatly facilitated if we assume that *r* and *ṛ* had the same point-of-articulation classification (Bare 1976:171). We may trace the development of retroflexion in *r* and *ṛ* in the following sequence:[70]

Indo-Iranian
*r, *ṛ (*ərə)
(not cerebrals)

↓

Ur-Ṛgvedic
*r, *ṛ
(not cerebrals)

↓

*Prātiśākhya*s
r, ṛ
(not cerebrals, but cerebralizers)

↓

Pāṇinīya-Śikṣā
r, ṛ
(cerebrals and cerebralizers)

11.6. The phonetic description of *r* and *ṛ* in the *Prātiśākhya*s is perhaps more significant in understanding the history of retroflexion than it first

appears. Fortunatov's Law connects the Indo-European clusters of *l plus dental with Sanskrit retroflexes, but in the later periods of Indo-Aryan, we find *r* and *ṛ* emerging as cerebralizers and have to connect clusters like *rt*, *rd*, *rn* with *ṭṭ*, *ḍḍ*, *ṇṇ*, and *ṭ*, *ḍ*, and *ṇ* in later Indo-Aryan. Emeneau speculates that in Proto-Indo-Aryan there were "backed" allophones of dentals, which were interpreted as retroflexes by the mixed Aryan-Dravidian bilinguals. If we observe closely the *Prātiśākhya* description of *r* and *ṛ*, we can see a phonetic motivation for Emeneau's comment in the role of these sounds as "cerebralizers." The sound *r* is rarely classified as dental. It is mostly alveolar. The vowel *ṛ* is mostly velar, and occasionally alveolar. Thus, both of these sounds may be described as "backed" with respect to dentals. This may phonetically explain why sequences such as *rt*, *rd*, *rn*, etc., would develop an assimilatory "backward" pull. Thus, a cluster of an alveolar *r* and dental *t* could easily produce an alveolar *t*. This alveolar stage would then be interpreted by the Aryan-Dravidian bilinguals as retroflexion. According to the *Ṛgveda-Prātiśākhya* (1.9), the *t*-series is not dental, but alveolar. It is true that the dental/alveolar variation is not phonemic, but it clearly provides documentary evidence for the existence of what Emeneau calls the "backed" allophones of dentals. The Indo-Iranian clusters like *žd* and *št* may be viewed in the same light, where the palatals *ž* and *š* must have exerted a similar "backing" influence on *t* and *d*.

12. ASPECTS OF DRAVIDIAN INFLUENCE ON INDO-ARYAN

12.1. With respect to the influence exerted on the early Aryan speech by the Dravidian languages of North India, I shall touch upon a point which has been left out of consideration by many previous studies. Referring to *Tolkāppiyam* (*Piṛappiyal*, verse 9), P. S. Subramanya Sastri (1930:13) remarks: "These two sounds *ṯ* and *ṉ* are alveolar according to Tolkāppiyaṉar, but at present they are pronounced by rounding the tongue and allowing it to touch the uppermost part of the hard palate exactly in the same way as *ṭ* and *ṇ* are pronounced in Sanskrit. Hence, it is worth investigation whether the Sanskrit *ṯ* and *ṉ* were borrowed from the Dravidian languages." He argues that retroflexes in Sanskrit are independent of Dravidian influence and that Fortunatov's Law could have worked independently in producing Sanskrit retroflexes (1934:58-60). He quotes Jesperson in support of this "natural development" theory, and takes the existence of retroflexes for granted in the *Ṛgveda*. With this he argues that the *Ṛgveda*, even though it has retroflexes, was composed before Sanskrit had been influenced by Dravidian languages. This argument presents interesting problems which are worth notice.

12.2. If all Dravidian languages had a triple contrast of dental/alveolar/retroflex, e.g., *t, ṯ, ṭ*, then at first it would appear unnatural that Dravidian influence would accelerate the change of Proto-Indo-Aryan dental *t, d, n*, or even *rt, rd, rn* to retroflex *ṭ, ḍ*, and *ṇ*. It would seem more natural that a dental *t*, under the influence of *r*, would shift to an alveolar *t*. Thus, we might expect in Sanskrit, under Dravidian influence, an alveolar series, rather than a retroflex series.

However, Subramanya Sastri's argument is based only on one interpretation of Tamil, and does not take into account other Dravidian languages. In fact, while discussing Dravidian influence on the early phases of Indo-Aryan, consideration of Tamil is somewhat irrelevant, as early Indo-Aryan was definitely not affected by a southern Dravidian language, but must have been affected by northern Dravidian languages. Even a casual glance at the tables of phonetic correspondences given by Burrow and Emeneau (1961: xii-xiii) and Andronov (1970:38-39) show us an astonishing picture of Dravidian alveolar sounds. The northern Dravidian languages, i.e., Brahui, Malto, and Kurukh have no alveolar sounds. Among the central and south-central Dravidian languages, only Old Kannada, Old Telugu, Gondi, and Konda have a single alveolar sound, i.e., *ṟ*, while the other languages have no alveolar sounds. Toda in the south has the maximum number of alveolar sounds, i.e., *ṯ, ḍ, ṟ, ṣ, ẓ*, and *ṉ*, while Malayalam and Kolami have only some: *ṯ, ḍ, ṟ*, and *ṉ*. Kolami does not have *ṟ*. Old Tamil had the alveolar sounds *ṯ, ḍ, ṟ*, and *ṉ*, but Andronov (1970:34) points out that "in Modern Tamil alveolar sounds (and phonemes) as well as the liquid retroflex sonant *ẓ* do not exist."

12.3. We have no clear historical evidence that the southern Dravidians of modern times are the ancient northern Dravidians pushed downwards by the Aryans. Brahui, Kurukh and Malto share some common innovations, and Emeneau (1962c:62ff.) argues for the existence of a northern Dravidian family which included these languages. "Having also words in common not known from other Dravidian languages, they may be considered as remnants of a large north Dravidian dialect area, which was subsequently overlaid and assimilated by the Aryans" (Porpola 1975:191). Thus, it seems natural to assume that the Aryans confronted and gradually intermingled with the northern Dravidians who did not have alveolar consonants, but, like all Dravidians, had markedly retroflex consonants.

12.4. This is quite interesting. Existence of alveolar *ṟ* in some of the central Dravidian languages may explain to some extent why the Sanskrit *r* of the *Prātiśākhya* period could vary from dental to alveolar, and could stay an alveolar for some time, despite the emergence of *ṭ, ṭh, ḍ, ḍh*, and *ṇ*. The

central Dravidian languages, Old Kannada and Old Telugu show retroflex *ṭ, ḍ, r*, and *ṇ*, but they do have the alveolar *ṟ* as well. However, under the influence of the existence of retroflex *r* in all the Dravidian languages, and internal phonemic leveling, this alveolar *ṟ* of the *Prātiśākhya* period seems to have shifted later to the retroflex *r*, as is seen in the *Pāṇinīya-Śikṣā* and other later treatises. In the development of retroflexes from dentals, there must have been an alveolar or "backed dental" stage, but this stage must have been quite unstable, since the northern Dravidian languages did not have alveolars. The existence of this unstable alveolar Sanskrit series is further supported by the fact that the *Ṛgveda-Prātiśākhya* considers the *t*-series to be alveolar rather than dental. This variation is clearly allophonic, but its existence as recorded by the *Ṛgveda-Prātiśākhya* is significant nonetheless.

12.5. Northern Dravidian languages do not have *ṣ*, and it is absent from Old Kannada, Old Telugu, and Old Tamil. This makes it harder to link emergence of *ṣ* in Sanskrit with any direct Dravidian influence. This corroborates the view expressed by Burrow (1971:554) and Ivanov and Toporov (1968: 49) that the development of *ṣ* in Sanskrit, by a special modification of the *ruki* rule was a somewhat different process from the emergence of *ṭ, ṭh, ḍ, ḍh*, and *ṇ*. However, later phonemicization of *ṣ* is indirectly connected with the general leveling of all retroflex sounds. Thus, northern Dravidian languages substantially explain the phonetic and phonemic transformations of the ancient Indo-Aryan. Since northern and central Dravidian languages show the most influence by Indo-Aryan (Zvelebil and Švarný 1955:379-80), we may look to these languages for early Dravidian influence on Indo-Aryan, rather than to the remote languages of extreme South India.

12.6. With respect to the argument given above in this section, Professor Emeneau suggests (in a personal communication) that Proto-Dravidian had a set of alveolars and most probably even the early North Dravidian languages had alveolars at the time they met the Indo-Aryans. Not being a Dravidianist myself, I can only gratefully accept Professor Emeneau's suggestion, without any further questions. If this is indeed the case, it would lead to a reconsideration of the explanation given.

One could argue that in a situation of language contact, the phonetic or phonemic polarities are more distinctly noticeable than the intermediate positions. Thus, it is quite conceivable that Dravidians perceiving the Aryan language viewed dentals and their backed allophones in terms of this polarity principle. Therefore, the "backed" allophones of dentals shifted to the polar position of retroflexion rather than stabilizing at the intermediate position of alveolars. Eventually, as the dental-retroflex polarity became dominant in

Indo-Aryan, the Dravidian languages in the North, which were encircled by Indo-Aryan, themselves adopted this dominant polarity, and hence the North Dravidian alveolars were eventually lost. As an example of this polarity principle, one may point out that despite the presence of alveolars in the South Dravidian languages today, the English alveolars are still perceived and pronounced by the speakers of these languages as retroflexes. This is the only explanation I can come up with at present. This explanation fits very well with the concept of "maximal differentiation" advocated by André Martinet (1966:191-92).

I have retained my previous explanation simply because both of these explanations are, coming from a non-Dravidianist as they do, no more than suggestions.

13. PROBLEMS IN THE RECONSTRUCTION OF THE UR-RGVEDA

13.1. Though it may be concluded with a fair degree of probability that the language of the Ur-Rgveda could not have been far removed from the ancient Iranian, the process of actual linguistic reconstruction is full of extreme difficulties, some of which we may never be able to overcome. Chatterji (1960:58-59) says that the present text of the Rgveda (1.1.1a) *agnim ile purohitam* may have been originally *agnim iźdai purazdhitam*. Going back from *l* or *ḍ* to *źd* takes us from a single consonant to a cluster. This would also lead us to assume shortening of *i*. Thus, it is important to realize that restoring the nonretroflex originals of the Ur-Rgveda would also perhaps require vocalic changes, if we go all the way back to the Proto-Indo-Iranian clusters. Fortunately, this does not alter the number of syllables in the text and hence would not harm the metrical form. We must also realize that the sound change from *źd* to *ḍ* or *l* is not a direct change of one sound into another but implies a whole range from *źd* to *ḍ* or *l*. It seems probable that the cluster *źd* would pass through a phase of being reduced to a geminate or an emphatic single consonant before being reduced to a single retroflex *ḍ* or *l*. Sākalya's own word-text *duḥ-dabha* for the Rgveda *dūlabha* (7.86.4c), shows that he is aware of a probable development such as *dur-dabha>dūdabha>dūlabha*. It is quite possible that the Ur-Rgveda had some kind of geminates or emphatic backed allophones of dentals. However, in the present state of our knowledge, we cannot be more precise about the exact nature of these Ur-Rgveda sounds. Mehendale (1963:41) shows that a palatal pronunciation of the retroflex *ṣ* continued dialectally in Sanskrit even during the period of the Upaniṣads. This makes the prospects of an exact reconstruction quite difficult.

13.2. I shall discuss only a few problems in the linguistic reconstruction of the original nonretroflex sounds. For instance, if we remove *ṣ* from the text of the present Rgveda, where do we go back to? The retroflex *ṣ* in Sanskrit corresponds to various sounds in different Prakrits, e.g., to *s* in Pāli (Skt. *puruṣa*/Pāli *purisa*); to *ś* in Māgadhī (*puliśe*); to *kh* in some branches of Yajurveda (*purukhaḥ*), and to *ch* (Skt. *ṣaṭ*/Pāli *cha*). This may indicate the complexity of the problem. Alfred Master's description of *ṣ* and its features raises complex historical problems. He remarks: "Now *ṣ* is a cerebral by convention only. It is, like *r*, a cerebralizer, rather than a cerebral and has been differentiated from the palatal *ś*, its fellow hush-sound, partly for graphical, partly for phonetic reasons. So we find *aṣṭau* 'eight', but *asītiḥ* 'eighty', *pṛṣṭa* 'asked', and *praśna* 'question'. The phoneme is not carried into Middle Indian and for *ṣaṣ* we find *cha*, which seems to show that *ṣ* is a graphic variant of *kṣ*, regular predecessor of *ch* or *kh* in Middle Indian. The later confusion of *ṣ* and *kh*, both phonetically and graphically (the Gujarati *akṣara* for *kh* is a form of Nāgari *ṣ*) points to the same conclusion" (Master 1960: 261). Existence of *ṣ* in the ancient northwestern inscriptional and noninscriptional Prakrits complicates the issue of *ṣ* to a great extent. The sound *ṣ* is distinctly preserved in the Niya Prakrit, in the Prakrit Dhammapada, in northwestern Aśokan dialects and in Dardic languages (Konow 1936:609; Burrow 1936:419). Niya Prakrit, which presents a pronouncedly more archaic aspect than the northwestern Aśokan dialect, better preserves the cluster *rṣ* (Burrow 1936:422). Like Niya Prakrit, occasionally later Kharoṣṭhī inscriptions of the northwestern region have *ṣ* even in those contexts, where Sanskrit shows *ś* or *s*, e.g., *śr>ṣ* in *ṣamana* (from *śramana*); in Niya, *śmaśru>maṣu* and *śrayate>ṣayati*; the Kharoṣṭhī Dhammapada shows it, and also a similar treatment of *sr* in which *anavaṣutacitasa* is equated with *anavasruta* (Burrow 1936:422).

13.3 Mehendale's occasional reconstructions of some of the "pre-Sanskrit" stages also raise some interesting issues. He says: "I had suggested that such an extension of I [nternal] R [econstruction] can be done on the basis of Sanskrit past passive participle morpheme, where we can see the alternation *t/ṭ* *(ga-ta/tuṣ-ṭa)*. On internal evidence this *ṭ* can be reconstructed as *t*, because *t* never occurs after *ṣ* in Sanskrit....But once this is done, we make use of this information and always remember the possibility of reconstructing *ṭ* as *t* in other non-alternating items where *ṭ* occurs in the same environment (after *ṣ*) in which it alternates with *t* in the paradigm. Hence, the possibility of reconstructing Sk. *aṣṭa-* as *aṣta* should not be lost sight of when we are comparing Sanskrit with Avesta which shows the cognate *ašta*" (1968:88). Referring to

the forms *gata-* and *tuṣṭa*, he says, "We have every right to assume that the morpheme of the pre-Sanskrit stage had the phonetic shape **ta*, and not **ṭa*. The implication of our choice is that in the history of Sanskrit **naṣṭa>naṣṭa*, and not **gaṭa>gata*. In this illustration, I do not think anyone will feel satisfied if we were to say that from the Sanskrit alternation *t/ṭ*, it should be possible to reconstruct 'one original morpheme, *ṭa'* " (1968:96-97).

13.4. I largely agree with Mehendale's analysis, but would like to point out some differences. I would rather consider his "pre-Sanskrit" stage as closely corresponding to what I think to be the state of the original compositions of the *Rgveda*. Another point is that I doubt if one can reconstruct forms like **tuṣṭa* and **naṣṭa*, as different from the Indo-Iranian **tuśta* and **naśta*, implying that there was a stage in the history of Indo-Aryan when the phonemic contrast between *ś* and *ṣ* had developed, but the phonemic contrast between *t* and *ṭ* had not developed. In my opinion, the initial allophonic divergence between *ś* and *ṣ* on the one hand, and *t* and *ṭ* on the other, leading eventually to a phonemic split, went on quite side by side.

13.5. Mehendale has another interesting discussion of the emergence of *ṣ* from *s*. He says: "In Sanskrit, *s* alternates with *ṣ*, some of the environments being when the former is preceded by *i, u, e, o*. The first two of these vowels have closeness as the common feature, but while *i* is a front vowel, *u* is a back vowel. The first and the third are both front, but *i* is close while *e* is an open vowel. Now on some other evidence if it is possible to reconstruct Sk. *e* and *o* as **ai* and **au*, then we discover closeness as a feature common to all the four (*i, u, ai* and *au*) environments. Therefore it should be possible for us to say that the change **s>ṣ* is two stages removed from the attested stage, while **ai>e* is one stage removed" (1968:101). This is an interesting discussion and would indicate one possible way of reconstructing a pre-*ṣ* stage in the prehistory of Sanskrit. It shows the possibility of certain vocalic changes being necessary for such a reconstruction. I shall not go into a detailed discussion of Mehendale's analysis at this point, but I may point out that he is taking into account only the vowels in the *ruki* rule and that basically the *ruki* rule yields a palatal *ś* from Indo-European **s*, and that this rule is partially extended in Sanskrit to *ṣ*. Even within Sanskrit, the rule as stated by Pāṇini (8.3.57, 58) incorporates more conditioning sounds than just *i, u, e,* and *o* (cf. the examples: **dik-su>dikṣu, **pitṛ-su>pitṛṣu, **a-kār-sī-t>akārṣīt*). The question as to how, if at all, the sounds *i, u, r,* and *k* can be considered a natural class has been the subject of considerable investigation by Anderson (1968) and Zwicky (1970), although no entirely satisfactory solution has as yet emerged from this.[71]

14. OTHER INSTANCES OF ALLEGED DRAVIDIAN INFLUENCE

14.1. If the retroflex sounds do belong to a post-Ṛgvedic period, this would lead to a reconsideration of other elements such as gerunds and particular uses of *iti* 'thus', which are ascribed by some scholars to Dravidian influence (Kuiper 1967). There is no reason to rule out all foreign influences from the original speech of the Ṛgvedic poets. The very fact that there are loanwords in the *Rgveda* obviously indicates that there was some give and take even at that early period. However, as discussed in this paper, there is no evidence for extensive pre-Ṛgvedic convergence with non-Aryans. This opens up several new possibilities for consideration. If the Ṛgvedic gerunds and the use of *iti* cannot be traced back to extensive pre-Ṛgvedic convergence, what kinds of contacts may be considered to be sufficient for such borrowings of new patterns? Could these elements be traced back to some other source?

14.2. In fact, in both the cases, i.e., gerunds and the use of *iti*, we are not even talking about large-scale lexical borrowing. Kuiper (1967:91) himself notes that the word *iti* is an inherited word.[72] Similarly, in the case of gerunds in the *Rgveda*, we have to accept that they are not borrowed lexical items, but are developments of "inherited" roots, or, as Kantor and Jeffers (1976:44) point out, the Sanskrit gerund-endings reflect "regrammatized instrumental (*-tvā, -yā̆, -tyā̆*) or locative (*tvī*) verbal noun suffixes, and that they are to be associated etymologically with Old Indic infinitives in *-tu, -ti,* and *-i*." In this case, one would be seeking an explanation of a development of an "inherited" set of items in terms of "foreign influence."

14.3. Can we say on the basis of any general principles that the contact with the non-Aryans which was insufficient to produce large-scale phonological changes could have been sufficient to promote new morphological and syntactic developments of inherited items? Weinreich (1953) has studied such theoretical issues concerning languages in contact.[73] However, the total inventory of known linguistic and extralinguistic facts about early Aryan-Dravidian contacts is not sufficient to let us derive any conclusions which are in any real sense beyond doubt. Kuiper (1967:90) himself has raised several important doubts concerning the extension of methods based on later periods of history to early periods of prehistory. It may be noted that several scholars have expressed their disbelief concerning Dravidian influence in the development of Sanskrit gerunds.[74] A better approach here would be to investigate whether Ṛgvedic gerunds are rare and/or used differently than in Dravidian.

14.4. While considering retroflexion in Sanskrit and the question of Dravidian influence on early Indo-Aryan phonology, another instance ascribed by

some scholars to Dravidian influence deserves mention. Chattopadhyaya (1974:194ff.) says that in the days of Pāṇini the short *a* in Sanskrit was an open (*vivṛta*) sound like long *ā*, and that in post-Pāṇinian times this open short *a* became a close short *a* due to Dravidian influence. I have discussed this question in detail elsewhere (Deshpande 1975c) and have shown that there is no evidence to indicate that Sanskrit short *a* was an open sound in the days of Pāṇini and none to indicate that Dravidian influence on Sanskrit began only after Pāṇini. From the evidence in the *Aitareya-Āraṇyaka*, we know that retroflexion had already made its way into standardized Sanskrit speech before Śākalya, who precedes Pāṇini. Thus, if the Sanskrit short *a* became close due to Dravidian influence, it would probably have become close before the time of Śākalya. Actually, Macdonell (1916:14) claims that short *a* was open at the time of the composition of the *Ṛgveda*, but had become close by the time the Vedic recensions were put together. This may, then, parallel the case of retroflexion. However, the evidence presented by Macdonell is not quite conclusive for a determination of the change in phonetic quality of *a*, and there is no evidence yet to conclude that North Indian Proto-Dravidian had indeed a close short *a*. If Old Tamil is any indication, according to *Tolkāppiyam*, there is no quality distinction between Old Tamil *a* and *ā* (Subbiah 1968:253). Max Walleser (1927:195ff.), on the other hand, argues that the short *a* in Sanskrit has always been close, and he connects it with the Indo-European schwa (ə). If that is the case, we have no reason to suspect Dravidian influence in this respect.
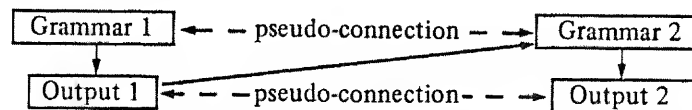
15. CONCLUSIONS

15.1. In conclusion, it must be emphasized that the aim of this paper is not to discount the contacts of non-Aryans with Aryans in Ṛgvedic times; but we must carefully differentiate between contacts, conflicts, confrontations, coexistence, and convergence. In the *Ṛgveda* we have evidence for contacts, conflicts, and confrontations with non-Aryans, but certainly there is no evidence for convergence with them. The Aryan speech at this time could not have been phonologically affected by foreign speeches. I think that Emeneau (1974) has come up with the correct linguistic process. Later speakers of Sanskrit, a mixed Aryan-non-Aryan community, interpreted allophones of Proto-Indo-Aryan in terms of their native Dravidian system. However, the convergence of Aryan-non-Aryan peoples required to support this process can be evidenced not for the Ṛgvedic times, but only for later times, and Emeneau himself, among others, has given significant evidence for later convergence in terms of the development of caste terminology.[75]

15.2. Even after accepting the arguments for Dravidian linguistic influence at the time of the *Ṛgveda*, Trautmann (1974:84) shows that the ancient North Indian literature does not show signs of cross-cousin marriage, which is a marked feature of Dravidian communities: "...had cross-cousin marriage obtained among the dominant Aryan group, its literature would have so testified." Thus, the Indo-Aryans did not borrow everything that was Dravidian from the first day of their arrival in India, and it is quite reasonable to assume that the non-Aryan influence on the language and culture of the early Indo-Aryans was not of equal strength at all times. Weinreich (1953:67) discusses various views concerning relationships of foreign influence in different linguistic domains such as vocabulary, sound system, morphology, syntax, proper names, etc., and points out that it is still very premature to say that we can predict priorities and proportions of influences among these various domains in a given situation of language contact.[76]

15.3. This discussion makes us aware of the fact that explaining the emergence of a feature like retroflexion involves many complex elements, and no simplistic solutions will work. After stating that "Indic acquires Dravidian retroflex apicals," Bailey and Gardens (1974:16) remark: "To analyse such typical cases in the history of languages as natural sound changes would of course be as theoretically profitless as to formulate umlauted German noun plurals or apophonic English verbs (e.g., *sing, sang, sung*) in terms of natural phonological rules." This indicates that features which are due to linguistic convergence cannot be reconstructed as part of texts belonging to a preconvergence stage, and it also warns us against pure genetic explanations of such features. Though features like retroflexion are unnatural from the point of view of genetic evolution within the Indo-Aryan language family, recent studies indicate that such features can be explained in terms of naturalness of loan phonology. Lovins (1974:240, 244) explains that the historic statement of the problem of loan phonology is that a speaker of a given language, in perceiving and reproducing the sounds of a foreign language, substitutes for them those that he takes to be "closest" in his own language. This further suggests that a feature like retroflexion, not genetically evolved, is a product of the process of *phonetic approximation* (cf. Lovins:240) of the phonic material of a given nonretroflexed language by the speakers of a retroflexed language. Thus, even in theory, it is hard to assume that speakers of a nonretroflexed language adopted the foreign feature of retroflexion without its phonetic approximation to their own system. Thus, to explain the development of retroflexion, we have to posit a sociolinguistic process of adaptation of a nonretroflexed Indo-Aryan tongue by the speakers of a retroflexed
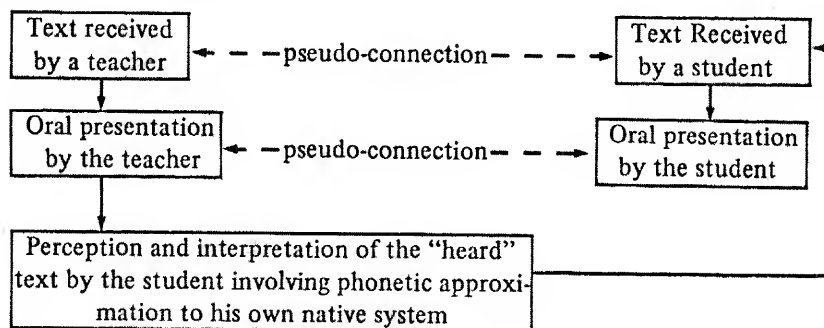
language. In the early stages, the principle of *phonetic approximation* must have affected the linguistic perception as well as the linguistic production of these people who adopted a nonretroflexed language as their second language. This process of linguistic adaptation guided by the principle of phonetic approximation can, then, be used to explain what happens in a preliterate oral tradition.

The orthodox Indian tradition has greatly respected the relationship of a teacher and his disciple and has continued to believe that nothing ever changed in this oral transmission. It is believed that the oral text has been handed down from one generation to the next without any changes. However, we must view a preliterate oral tradition with a fresh linguistic and analytical approach. We must distinguish a "pseudo-connection" from a "real connection" between two successive synchronic states of a preliterate oral text. For this purpose, we may compare the model of linguistic change given by Andersen (1973:767):

```
┌───────────┐                              ┌───────────┐
│ Grammar 1 │ ◄── ─ pseudo-connection ─ ──►│ Grammar 2 │
└───────────┘                              └───────────┘
┌───────────┐                              ┌───────────┐
│ Output 1  │ ◄── ─ ─pseudo-connection─ ─ ─►│ Output 2 │
└───────────┘                              └───────────┘
```

With respect to this model, Ebert (1976:ix) says: "The crucial process in language transmission—and the one that plays a central role in language change—is the learner's formulation of his grammar (Grammar 2) on the basis of the output of speakers from whom he learns (Output 1). An analysis of Output 1 by the learner which differs from Grammar 1 can lead to an observable change in usage."

By using this analysis of language change, we may construct a model for gradual change in a text orally transmitted from a teacher to a student in a preliterate society. The following is an attempted model:

```
┌──────────────┐                          ┌──────────────┐
│Text received │ ◄─ ─ ─pseudo-connection─ ─ ─ ─►│Text Received │
│by a teacher  │                          │by a student  │
└──────────────┘                          └──────────────┘
┌──────────────┐                          ┌──────────────┐
│Oral presentation│ ◄─ ─pseudo-connection─ ─ ─►│Oral presentation│
│by the teacher│                          │by the student│
└──────────────┘                          └──────────────┘
┌───────────────────────────────────────────────┐
│ Perception and interpretation of the "heard"   │
│ text by the student involving phonetic approxi- │
│ mation to his own native system                │
└───────────────────────────────────────────────┘
```

We must realize that only such dynamic models will explain the actual complex processes involved in the development of the nongenetic features like retroflexion in orally transmitted Indo-Aryan texts. With the above model in view, we may further sharpen our analytical tools.

Lovins (1974:244) talks about how context-sensitive processes determine one's perception of one's own native language and also of foreign sounds: "When we speak, we apply allophonic processes 'forwards' to produce contextual variants; when we listen to someone else, we apply them 'backwards' to relate the allophones to their associated phonemes....Likewise, in listening to unfamiliar foreign sounds, we try to relate what we hear to possible surface forms in our own language. These surface forms may already be acceptable underlying representations, or related to such by backwards-derivation of an allophonic process." Thus, one can say that when a teacher recites a "received text," he is applying allophonic processes "forwards" to produce an oral text. When a disciple hears this oral text, he applies the allophonic processes "backwards" to relate the heard allophones to "appropriate" phonemes in his own phonological system. When he recites the text, he applies allophonic processes "forwards" to the "received text." This received text must now, obviously, exist in full conformity with the disciple's native phonological system. Similarly, his "forwards" application of allophonic processes to produce an oral text must also be in full conformity with his native phonological system. Thus, if there is any difference between the native phonological systems of the teacher and the disciple, these underlying differences, plus the differences in the "forwards-and-backwards" application of allophonic processes, must lead to a gradual change in the transmitted oral text. This theoretical framework explains in a most clear manner the inner functioning of a preliterate oral tradition. Figure 3 is an attempt to schematize the nature of a preliterate oral tradition.
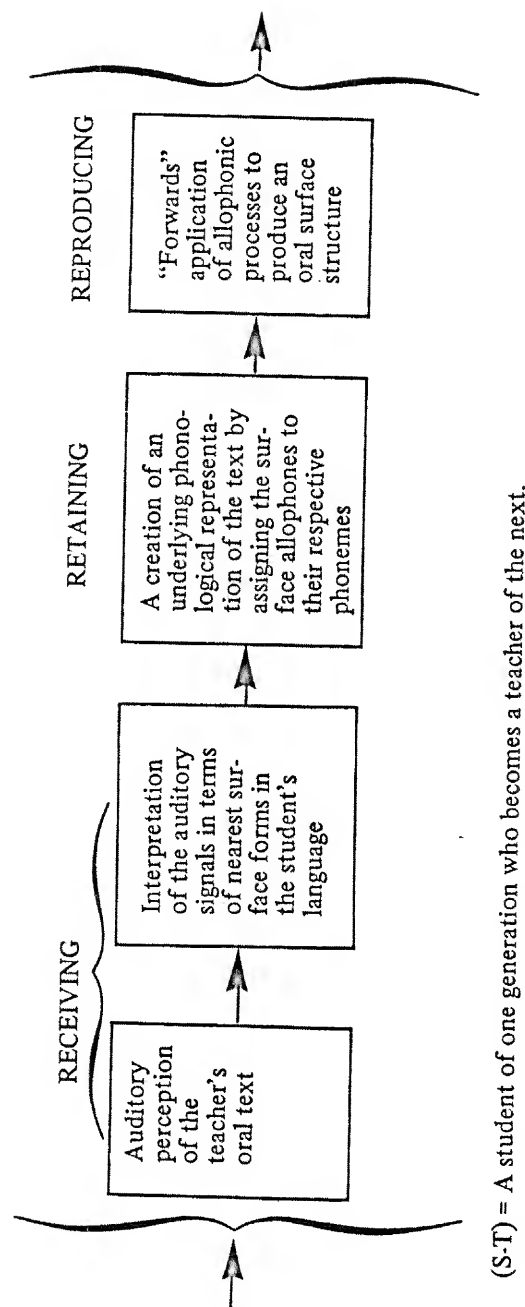
15.4. Having basically accepted Emeneau's "process" for the development of retroflexion, we may clearly distinguish between language contact that allows borrowing of vocabulary, but not transfer of phonemic contrasts, and contact which generates such contrasts. How far can we say that the Vedic Aryans, who originally did not have retroflexion in their language, developed this feature through contacts with non-Aryans whom they conquered, hated, dominated, and segregated? There are abundant examples which show that even culturally and politically dominating speakers of retroflexed languages could not transmit retroflexion to speakers of languages without retroflexion. For example, the Cambodians were culturally and politically dominated by an Indian empire. Through these Hindu and Buddhist contacts, the Old

FIGURE 3

MODEL OF AN ORAL TRADITION

"A student of the previous generation becomes a teacher of the next."

$(S\text{-}T)_1 \longrightarrow (S\text{-}T)_2 \longrightarrow (S\text{-}T)_3 \longrightarrow (S\text{-}T)_n$

$(S\text{-}T)$ = A student of one generation who becomes a teacher of the next.

RECEIVING

Auditory perception of the teacher's oral text

Interpretation of the auditory signals in terms of nearest surface forms in the student's language

RETAINING

A creation of an underlying phonological representation of the text by assigning the surface allophones to their respective phonemes

REPRODUCING

"Forwards" application of allophonic processes to produce an oral surface structure

Cambodian language borrowed a large number of Sanskrit/Pāli words. The Cambodians also adopted several aspects of Indian culture, but not retroflexion. In Old and Modern Cambodian, the Sanskrit and Pāli retroflexes are reduced to dentals.[77] The same phenomenon takes place in Old and Modern Siamese.[78] Burmese does have separate characters for retroflex sounds, which are used only in writing Pāli words, but the Burmese pronounce them exactly as the corresponding alveolars.[79] Assamese, an Indo-Aryan language which is historically almost a dialect of Bengali, shows convergence of dentals and retroflexes into alveolars, an event which can be explained as the result of the predominance of a Tibeto-Burman substratum in the Assamese population.[80]

15.5. Thus, simple contacts and even cultural and political domination do not seem to have caused the development of retroflexion in a nonretroflexed language. On the other hand, with respect to the occurrence of some retroflex sounds in eastern Iranian languages like Pašto, Parachi, and Ormuṛi, one can speak of Indian linguistic influence. Geiger and Kuhn (1895-1901:206-7) consider this point under "Fremde Elemente im Afghanischen," and speak of the influence of Sindhi. Morgenstierne speaks of Indic, and particularly Dardic, influence on Pašto.[81] Bloch (1965:56) thinks that "the presence of cerebrals in Afghan probably points to an Indian substratum," and a Dravidian element may be suspected on the basis of the nearby presence of Brahui.

15.6. In the case of Sanskrit, the origin of retroflexion lies not so much in the Aryans' borrowing this trait from Dravidians in early times as in Dravidians' adapting Aryan speech to their native phonology. As we can see from the cultural history of India, by the time of the *Brāhmaṇa* period, the speakers of the Sanskrit language were not pure Vedic Aryans but were already a mixed people. The development of the caste system shows to what extent the non-Aryan elements were Aryanized in the historical development of Hinduism.[82] Non-Aryans and non-Vedic Aryans were raised to the status of Brahmins and Kṣatriyas, and the Ṛgvedic enemies such as Paṇis seem to have been absorbed into the Vaiśya caste.[83] This makes one wonder if the descendants of the original Aryans were numerically not a minority in this mixed Aryanized society (Panikkar 1961:31). In the words of Dandekar (1967: 28-29): "In the long and continual history of Hinduism, the age of the Veda must be said to have occurred more or less as an interlude."

15.7. In classical Hinduism, the pre-Aryan Proto-Hinduism regained its strength in an Aryanized form, so much so that the Vedic gods like Indra and Varuṇa and their elaborate fire-sacrifices almost became extinct, while Kṛṣṇa, Śiva, and a host of other gods and goddesses came to dominate the field, with

the claim that they still represented the essence of the Vedas.[84] This process gradually changed the constitution of the Sanskrit-speaking community in such a way that the ethnic non-Aryan segment of this Aryanized community steadily increased in proportion. In such circumstances, speakers of Sanskrit were essentially bilinguals, with Sanskrit as their second language, and a local language as their first language. The particular process involved in the development of retroflexion as described by Emeneau applies clearly to this post-Rgvedic period. Steadily increasing retroflexion in Indo-Aryan is a significant index of this sociolinguistic and religious transformation of the Sanskrit-speaking community. However, to the speech of the Rgvedic poets, retroflexion was most probably still a foreign habit.

NOTES

1. Emeneau, *Collected Papers*, 1967:159. For details of the convergence theory, see Southworth and Apte 1974, Southworth 1974, and Hock 1975.

2. Pāṇini 8.3.19, 6.1.128, and 1.1.16.

3. *RPR* 1.16, 1.19, 2.44, 3.7, 3.13, 4.2, 4.5, 6.7-8, 11.10-11, 11.31 and 13.12 (numbers refer to chapter and verse respectively).

4. *Aitareya-Āraṇyaka* 3.1.1, 3.2.1, 3.2.6; and *Śāṅkhāyana-Āraṇyaka* 7.3, 7.16 and 8.1-2.

5. *RPR*, *Vargadvaya*, verse 7.

6. Introduction to *Śāṅkhāyana-Āraṇyaka*, Ānandāśrama Sanskrit Series, no. 90 (Poona, 1922).

7. "The passage may indicate [cf. also *Śāṅkhāyana-Śrauta-Sūtra*, 4.10.3, where Śākalya is younger apparently than Māṇḍūkeya] that the Māṇḍūkeya Śākhā had its Saṁhitā text before Śākalya produced the *Pada-Pāṭha*, which is quite likely" (Keith, *Aitareya-Āraṇyaka*, p. 257, fn. 9).

8. *MB*:vol. 1, sec. 1, pp. 292-93 and p. 54.

9. See also Bloch 1970:2.

10. See Dandekar 1961:vol. 2, pp. 3-4.

11. See also note 16.

12. S. B. Pandit (*Atharvaveda* [Bombay, 1895], vol. 1, Introduction, p. 6) records an informative account of his dealings with an *AV* reciter: "He was more shocked that the several MSS of that Veda...exhibited numerous varieties of reading, and still more horrified when he found that the text he knew by heart...was the worse for the improvements. His great anxiety at first was that the text I was going to publish should not show that his pāṭha was incorrect...though he little hoped the Vaidikas would exchange their corruptions for our corrections."

13. Uvaṭa on *RPR* 13.10. On *RPR* 10.7, he says that some reciters pronounce *ṅ* in the place of an *anusvāra*.

14. *RPR* 1.2 refers to *anusvāra* as an unvoiced sibilant, but 13.3 excludes it from sibilants, and 13.5 considers it to be a voiced nasal sound; see Deshpande 1976.

15. Also see James Bare 1976:26-27.

16. Hannes Sköld (1926:44ff.) refers to Vedamitra's view and says that if Vedamitra's description of *ḍ* and *ḍh* as palato-velars is correct, then their intervocalic replacements, namely *ḷ* and *ḷh*, could not be retroflexes. "But the description in all points coincides with that of that *l* of Lithuanian, of the Turkish and Slav languages, which is described as a 'guttural *l*' and the existence of which can be traced in Latin and Old Armenian" (p. 45). Sköld (p. 45) argues that the *ḍ/ḷ* and *ḍh/ḷh* alternation as upheld by Vedamitra and by Śākalya's text was not accepted by the *RPR* itself. His conclusion (p. 46) is interesting: "The development of *ḷ* is posterior to the Saṁhitā text....Is the *ḷ* introduced by the Śākalas?" He points out that for the word *vidvagam* in *RV* 1.118.9, the word text of Śākalya gives *vīḷu-agam*. Also see section 6.11 of this paper.

17. The Prakrit word *goṇī* for Skt. *gauḥ* is found in *MB*:vol. 1, sec. 1, p. 42. Other Prakrit expressions noted by Patañjali are: *yarvāṇa* and *tarvāṇa* (*MB*:vol. 1, sec. 1, p. 56), *āṇavayati* (*MB*:vol. 1, sec. 2, p. 125), *vaṭṭati* and *vaḍḍhayati* (ibid.), and *dinṇa* (ibid., sec. 1, p. 74).

18. The *Samayasāra* of Kundakunda, edited by J. L. Jaini (Lucknow, 1930). The verse 1.3 has *hodi* (Skt. *bhavati*), while the verse 1.13 has *havadi*. Metrically both the forms are of equal quantity. This makes one wonder if one of these forms was not a scribal error for the other, or if in the oral tradition the difference between *hodi* and *havadi* was simply metrically irrelevant.

19. *Pañcāstikāya*, Rāyacandra Jaina Śāstramālā, 3rd ed. (1969) vol. 7.

20. Śākalya has been quoted by Pāṇini (see note 2), and he along with others has been quoted by the *RPR*.

21. Another example (Bloomfield and Edgerton:vol. 2, p. 152) is the *Sāmaveda* variation of *made suśipram* with *madeṣu śipram*. On the variation *āpṛṇo'si/āpṛṇosi*, Bloomfield and Edgerton (vol. 2, p. 152) remark: "The latter is corrupt." For similar spontaneous variation of *s/ṣ*, see Bloomfield and Edgerton, pp. 149ff.

22. See note 16. The *VPR* (8.45) explicitly states that the Mādhyandina recension of the *YV* does not have the sounds *ḷ* and *ḷh* and that only the Kāṇva recension has these sounds. While the former is a North Indian tradition, the latter is a South Indian tradition. The commentaries of Uvaṭa and Anantabhaṭṭa on the *VPR* (3.87; 3.91, etc.) make it quite clear that the Kāṇva recension has decidedly more retroflexion than the Mādhyandina recension.

23. The *RPR* (1.8, 10) classifies *ṛ* as a *jihvāmūlīya* 'produced at the root of the tongue', and *r* as either *dantamūlīya* 'produced at the root of teeth' or *barsvya* 'alveolar'. The *VPR* (1.65, 68) classifies *ṛ* as a tongue-root sound and *r* as a dental. The *SCA* (1.20, 28) holds the same view. For the *TPR* (2.18, 41), *ṛ* and *r* are both alveolars.

24. The only favorable references are to some political alliances made by the Aryan enemies of the king Sudās with non-Aryans (*RV* 7.18-19), and a reference to the non-Aryan king Bṛbu who gave gifts to Aryan poets (*RV* 6.45.31-33).

25. *RV* 1.51.5-6, 1.103.4, 10.95.7, 10.99.7, and 10.105.11. It is extremely important to recognize that all of these references to *dasyu-hattyā* are found in those parts of the *RV* which are traditionally regarded to be late parts of that text. This would most probably mean that even by the time of the late parts of the *RV*, the attitudes of the Vedic Aryans had not significantly changed, and they still regarded the *dasyus* as those who deserve to be killed by Indra.

26. Other important descriptions are *ayajyavaḥ* 'non-sacrificers' and *anindrāḥ* 'those who do not believe in Indra'.

27. Burrow (1967:311) refers to twenty-five Dravidian loans in the *RV* and says that "it is not many, compared with the number in later Sanskrit." Kuiper (1955) lists many more non-Aryan loans in the *RV*, but many of these are debatable.

28. Vaidyanathan 1971. The rules for Tamilization of Sanskrit words are found in *Tolkāppiyam-Collatikāram*. For general rules for the Tamilization of Sanskrit words, see Vaidyanathan 1958, and Ganeshsundaram and Vaidyanathan 1958.

29. Bloch (1965:58) thinks that *kāṭa-* is derived from *kartá-*. Referring to Bartholomae's attempt to connect *kāṭa-* and *kartá-*, Burrow (1972:544) comments: "The connection of *kāṭa-* with *kartá-* is anything but certain, it could have a spontaneous cerebral and be connected with *kāṭu-* 'hole' along with which it is listed in Nighaṇṭu 3, 23."

30. W. J. Gedney, *Indic Loan-Words in Spoken Thai* (Ph.D. dissertation, Yale University, 1947). For details of nativization of Indic loanwords in Southeast Asia, see notes 77-79.

31. I refer to the following Sanskrit words, claimed to be Dravidian loanwords in the *RV* by Professor Southworth:

Skt. *phala-* 'fruit'	< DED 3299 *pazu* 'ripen'
Skt. *kulpha-* 'ankle'	< DED 1519 Ta. *kulampu* 'hoof'
Skt. *kulāya-* 'nest'	< DED 1563 Ta. *kūṭu* 'nest'
Skt. *bila-* 'hole, cave'	< DED 4459 Ta. *viḷ* 'open out'
Skt. *kula-* 'herd, flock'	< DED 1513 Ta. *kuzu* 'assembly' or DED 1562 Ta. *kūṭi* 'come together'

32. For a religio-historical perspective, see Dandekar 1967:29ff. Emeneau (1974) discusses Sanskrit caste terminology and its bearing on borrowing from the Dravidian social structure. Also see Srinivas 1966:1-45, and Chatterji 1962.

33. Chatterji 1962:70-71. Also see Nilakanta Sastri 1967:48ff. Burrow (*Collected Papers*, 1968:312) points out "that the great majority (of Dravidian words in Sanskrit) have become established by the time of the epic poems, Mahābhārata and Rāmāyaṇa, and of these a large proportion are first quoted from these texts." Evidence gathered by Emeneau (1974:112) for social convergence on the basis of caste terminology also begins with lists of caste terms in the Mahābhārata. Also see Hart 1975:277ff.

34. *Śāṅkhāyana-Āraṇyaka* 7.13 refers to the views of Madhyama Māṇḍūkeya Magadhavāsin Prātibodhiputra. He is the "middle" Māṇḍūkeya residing in Magadha. For other early Brahmanic traditions in the east, see Chakladar 1928.

35. *Kauṣītaki-Brāhmaṇa* 7.6. See Keith, *Ṛgveda-Brāhmaṇas*, Harvard Oriental Series, no. 25 (1920):387. Also see Chatterji 1960:50. Chakladar (1928) holds that the first Aryan migration produced the Vedas, but that these Vedic Aryans were pushed into the "outer" regions by the second wave. His views are based on tenuous interpretations of the Vedic evidence, and I plan to deal with them separately.

36. See note 34.

37. Macdonell (1916:14, 22-23) shows that where Śākalya's recension of the *RV* shows a merging of the two vowels and a resulting loss of a syllable, needed by the meter, we must restore the two original vowels. The *Aitareya-Āraṇyaka* (3.1.5) gives indications that the text of the Māṇḍūkeya recension in fact kept these vowels separate and was thus closer to the original than Śākalya's text. See Keith's note on the *Aitareya-Āraṇyaka*, p. 244.

38. For a more comprehensive study, see Rakshit 1966.

39. Oldenberg 1882:9. He points out that the river Sadānīrā was the dividing line between the Vedic Aryans and the outlandic Aryans. The sacrificial fire had not crossed to the east of the river Sadānīrā (ibid., pp. 10-11).

40. Oldenberg (1882:394) says: "Thus we have here a distinction between those stocks, who felt themselves to be qualified champions of Aryan culture, and those who were Aryans, it is true, but were not regarded as equally accredited partakers in this culture. Momenta of many kinds may have co-operated to bring about and enhance this difference. Association with non-Aryan elements, to which the stocks that had migrated to the greatest distances were especially exposed, may have been at the same time in play."

41. Also see Banerjea 1963:81ff.

42. Mehendale 1948:297; Konow 1936:609; and Burrow 1936:419.

43. *atha vāg itihāsa-purāṇam yac cānyat kiñcid brāhmī-kṛtyevādhīyīta, tad apy evam eva vidyāt/*

44. This is expressed by the grammarians with the term *abhūta-tad-bhāva* 'transforming *x* into something which it is not'.

45. *Aitareya-Āraṇyaka* 3.2.3 uses the word *akṣara-samāmnāya* and says: "That which we call the person of the meters is the collection of letters. Its essence is the letter *a*." In 2.3.8, we have the assertion *a iti brahma* 'Brahman is named *a*'. In 2.3.6, *a* is said to represent speech as a whole. This clarifies the relation between the concepts of *vāk*, *brahman*, and *akṣara-samāmnāya*.

46. *VPR* 8.1.32 refers to *varṇa-samāmnāya* and calls it *brahma-rāśi*; also *RT* 1.4 and *MB*:vol. 1, sec. 1, p. 102.

47. *NR* 1.127-28; *MB*:vol. 1, sec. 1, p. 54.

48. *MB*, on P.6.3.109, vol. 2, p. 884.

49. Chatterji 1956:24-27. On page 26, he says: "Such a state of things is nothing new or remarkable in the history of literature—viz., of literary composition in one form, and an earlier one, and preservation and transmission in another and a later form of the language. The Vedas were probably compiled in the 10th century B.C., but some at least of the Vedic hymns were composed several centuries earlier and were continued from generation to generation by oral tradition, and these were unquestionably first composed in an older form of the speech than what we find in the compiled text, which is our received text."

50. Chatterji (1960:52-54) doubts the Phoenician origin of the Brāhmī script and suggests that it was adopted from the ancient Sindh-Panjab script of the non-Aryans. However, recently Dani (1963) has reasserted Bühler's theory, and it has also been accepted by Mahadevan (1970 and 1960), who shows that Brāhmī was later adapted for ancient Tamil.

51. Bühler 1895:2-3. Though Cunningham thought that the Brāhmī script was of purely Indian origin, he remarks: "Similarly, the series of cerebral letters, which was also wanting originally in Tibetan, was afterwards supplied by the invention of new letters, which are simply the five dental letters reversed. This is not exactly the case with the cerebral letters of the Ariano-Pāli alphabet, but their forms differ so slightly from those of the dentals, that it seems highly probable that they must have been a late addition to the original alphabetical scheme" (*Corpus Inscriptionum Indicarum*, vol. 1, introduction; p. 49; reprinted by Indological Book House, Banaras, 1961).

52. Pāṇini 8.3.57 (*iṇ-koḥ*).

53. "In the lingual *ḷa*, derived from the round *ḍ* a small semi-circle has been added to indicate the change of the phonetic value. Here also, I believe, we may recognize the influence of the grammarians or phoneticists. For the sounds *ḍa* and *ḷa* are frequently interchanged in the same word. Thus we find already in the Vedas regularly a *ḷa* for a *ḍa* between two vowels, as in *īḷe* for *īḍe*" (Bühler 1895:77).

54. "The absence of first two nasals *ṅ*, *ñ* and 'retroflex' or 'cerebral' consonants, namely *ṭ*, *ṭh*, *ḍ*, *ḍh* and *ṇ*, and the presence of *g*, *th*, *d* and *b*, which do not occur in Tamil, clearly show that the Late Harappan language is closer to the Indo-European than to the Dravidian group of languages" (S. R. Rao 1972-73:9).

55. Parpola (1975) assumes that the Indus Valley language is a form of ancient Dravidian. I think Thieme (1955:439) rightly points out that "it is easy to agree with Emeneau that 'the assumption that the language of the Indus Valley documents was Dravidian is clearly not fantastic' (*Proc. Amer. Phil. Soc.*, 98. 283 [1954]); the trouble is that the assumption that it was *NOT* is clearly not fantastic either."

56. P.6.1.64 (*dhātv-ādeḥ ṣaḥ saḥ*) and P.6.1.65 (*ṇo naḥ*). The rules P.8.3.56ff. and P.8.4.14ff. indicate the complexity of the problem. Referring to the question of unclear morpheme boundaries, Brough points out that we can have "*pūrvāhnaḥ*, but *durahnaḥ*, without option, whereas in other examples the option may be permitted: *surāpāṇam*, *surāpānam*. In spite of the struggle to reduce this complicated situation to a series of rules, the junction of *upasargas* seems to have been particularly resistant to systematic formulation." With respect to Pāṇini 8.4.1ff., he adds: "Many of the rules are doubtless valid, but it may be suspected that some of them are useful to the same extent as the advice given to schoolboys in elementary textbooks of Latin, that 'most names of rivers and many names of mountains are masculine' " (Brough 1962:107).

57. *MB*, on P.6.1.64-65, vol. 2, p. 715. Patañjali provides partial generalizations for *ṣopadeśa* and *ṇopadeśa* categories, with lists of additions and exceptions. All *n*-initial verbs are *ṇopadeśa* verbs, except *nṛt*, *nand*, *nard*, *nakk*, *nāṭ*, *nāth*, *nādh*, and *nṝ*. All *s*-initial verbs, with a post-initial vowel or a dental consonant, are *ṣopadeśa* verbs, except *sṛp*, *sṛj*, *stṝ*, *styā*, *sek*, and *sṛ*, but including *smi*, *svad*, *svid*, *svañj*, and *svap*. For a discussion of the implication in this passage that Patañjali considered *v* to be a pure labial sound, see Deshpande 1975a:54.

58. In practice, we do not find a word-final *ś* followed by a word-initial *s*. The final *ś* changes either to *k* or *ṭ*. For the development of final *ś*, see Kuiper 1967a.

59. The change *s>ṣ* of this kind is no longer productive in classical Sanskrit. It is found only in archaic survivals.

60. *RV* 1.173.12. Bloomfield's *Vedic Concordance* (p. 723) provides many more occurrences of *mo ṣu* in different texts. Other examples are *āsu ṣmā naḥ* (*RV* 6.44.18), and *parīto ṣiñcata* (*RV* 9.107.1). Abhyankar (1974:55) calls the change of *sma* to *ṣma* in the above passage an irregular change.

61. P.8.3.101 (*yuṣmat-tat-tatakṣuḥṣv antaḥpādam*) has the condition *antaḥpādam* 'within the same metrical foot', and several following rules are governed by this condition. See the *Kāśikā-vṛtti* on these rules for Vedic examples.

62. This refers to the precodification period, when the Vedic hymns were a floating oral literature. Esteller (1969:9) says: "This will appear all the more convincing and decisive if we recollect that we are dealing with compositions in an archaic-literary style of a language that is beginning a period of rapid evolution—owing to a swift expansion and the influence of a pre-Aryan linguistic substratum." Also see Chatterji 1960:52. For a possible explanation of unevenness in these developments, see Lovins 1974:242.

63. The *Kāśikā-vṛtti* on P.8.3.102ff. quotes important examples of irregular retroflexion in the *Taittirīya-Saṃhitā: agniṣṭat* (1.1.14.5) and *agnistat* (3.2.5.4). Abhyankar (1974:35) notes that the *Taittirīya* reciters occasionally pronounce *ṇ* in the place of *n* without any reason: *enāḥ/eṇāḥ*, and *agniḥ/agṇiḥ*. He also points out that this practice is already noticed by Bhartṛhari (about 400 A.D.). Kuiper (1965:77ff.) notes the development of similar secondary retroflex variants from dentals in

Munda. Hoffmann (1960:176-77) refers to the variation in the Maitrāyaṇī and the Kaṭha versions of the *YV*.

64. If the words in a given sequence are *xyz*, then the later permutation-combinations could be produced giving us patterns like *xy, yz; xyyxxy, yzzyyz*, etc. But all these variations depend on first having the "continuous" text split into *x, y,* and *z*. If an editor-redactor felt that a certain sequence as a whole was a single word and was not to be split into *x, y,* and *z*, then there cannot be further variations based on *x, y,* and *z*.

65. See note 63.

66. *Pāṇinīya-Śikṣā*, verse 17. Also see note 23.

67. P.8.4.2 (*aṭ-ku-pv-āṅ-num-vyavāye' pi*) gives the conditions for noncontiguous application of the retroflexion rule. For a recent study of the noncontiguous aspect of this process, see Dasgupta (1972:118ff.).

68. *raśruter laśrutir bhavati, MB*:vol. 1, sec. 1, p. 84. For details, see Deshpande 1975*b*: 22-26.

69. Ibid.

70. This compares well with Emeneau's suggestion (1974:93) concerning the "backed" allophones of dentals which he suggests were later interpreted in terms of retroflexes by the mixed speakers.

71. Henning Anderson, "IE **s* after *i, u, r, k* in Baltic and Slavic," *Acta Linguistica Hafniensia* 11(1968):171-90; Arnold Zwicky, "Greek-Letter Variables and the Sanskrit *ruki*-Class," *Linguistic Inquiry* 1(1970):549-55.

72. Also see Eric P. Hamp (1976:351-61), who has an insightful discussion of the *iti*-problem, where the role of the inherited item and the role of the *Sprachbund* have been presented in a balanced manner.

73. Also see Weinreich, Labov, and Herzog 1968; Hoijer 1948; and Dell Hymes 1964 and 1971.

74. Kuiper 1967:83.

75. Hock (1975:114) considers all the available evidence and concludes: "While it is thus unlikely that there was early convergence of Indo-Aryan with Dravidian, this should not be understood to imply that there is proof against such a convergence." Burrow (1955:387) cautiously says: "The main influence of Dravidian on Indo-Aryan was concentrated at a particular historical period, namely between the late Vedic period and the formation of the classical language." On the basis of comparisons of caste terminology in Sanskrit and Dravidian languages, Emeneau (1974: 113) argues that "the invading Aryans did not bring this social structure with them. They either met it in India and adopted it in their process of Indianization, or they and those they met in India developed it together to produce the India we know now." However, the elaborate lists of caste terms on which Emeneau's argument for convergence is based are first found in the *Mahābhārata* and not earlier. From a study of Agnicayana, Converse (1974) comes to the similar conclusion that convergence took place at a post-Ṛgvedic period. Hart (1975) arrives at similar conclusions through a study of the literary history of Indo-Aryan and Dravidian. He shows that the principle of poetic suggestion (*vyañjanā*) is of Dravidian origin, and that it makes its headway in Sanskrit literature after *Mahābhārata*, but is clearly seen in the *Rāmāyaṇa*. I have myself dealt with the question of the gradual increase of non-Brāhmaṇa and non-Aryan elements among the Brāhmaṇas in a post-Ṛgvedic period

in an article under preparation. In the case of Vyāsa, for instance, we find that his mother, grandmother, great-grandmother, and perhaps the great-great-grandmother were all at least non-Brāhmaṇa, if not also non-Aryan. But he was a Brāhmaṇa.

76. His discussion of the views held by Whitney, Pritzwald, and Dauzat on the relative strengths of the various linguistic domains is particularly illuminating.

77. Sanskrit-Pāli

Sanskrit-Pāli	Old Cambodian	Modern Cambodian
t	> t (voiceless)	> t in clusters otherwise *d*.
th	> th (voiceless)	> th
d	> d (voiced)	> t
dh	> dh (voiced)	> th
n	> n (voiceless?)	> n
ṭ	> t (voiceless)	> d
ṭh	> th (voiceless)	> th
ḍ	> d (voiced)	> d
ḍh	> dh (voiced)	> th
ṇ	> n (voiced)	> n

I am indebted to Professor William Gedney for this information.

78. Sanskrit-Pāli

Sanskrit-Pāli	Old Siamese	Modern Siamese
t,ṭ	> t (voiceless)	> t
th,ṭh	> th (voiceless)	> th
d,ḍ	> d (voiced)	> th
dh,ḍh	> d (voiced)	> th
n,ṇ	> n (voiced)	> n

This information is also provided by Professor William Gedney. The origin of retroflexion in Javanese is controversial, and the influence of Sanskrit and/or the existence of retroflexes *ṭ* and *ḍ* in Proto-Austronesian are hotly debated issues. See *Proto-Austronesian* by Otto C. Dahl (Lund, 1973), pp. 55ff.; and "Problems of Austronesian Comparative Philology," by André G. Haudricourt, in *Indo-Pacific Linguistic Studies*, pt. 1., edited by Milner-Henderson (Amsterdam, 1965). It is very difficult to say that Javanese "developed" retroflexion due to Sanskrit influence. It would be more appropriate to say that the Sanskrit influence strengthened the allophonic variation between dentals and alveolars, a variation which may have been originally stylistic or dialectal and which was also influenced by Malay loanwords with apical stops which were pronounced further back than the Javanese apical stops. Despite the use of the word "retroflex" with respect to Javanese *d* and *ṭ* and **ṭ* and **ḍ* in Proto-Austronesian by Haudricourt and Dahl, there is actually no Sanskrit-like retroflexion in Javanese, but, rather, a contrast between dentals and alveolars. The retroflex signs in writing are due to the influence of Sanskrit, but have no corresponding phonetic value. The Sanskrit sounds have been definitely assimilated into the native phonology, e.g., the aspirate stops *ṭh* and *ḍh* are deaspirated and assimilated into alveolar *t* and *d*. Similarly, the nasal retroflex *ṇ* and sibilant *ṣ* of Sanskrit are assimilated into dental *n* and *s* respectively. Thus, we

cannot look at Javanese as being very different from the normal pattern of assimilation of foreign sounds into components of the native phonology. I am thankful to Professor Alton Becker for clarifying for me the relationship between Sanskrit and Javanese.

79. J. A. Stewart, *Manual of Colloquial Burmese* (London, 1955), p. 6.

80. Banikanta Kakati, *Assamese, Its Formation and Development* (Gauhati, 1941), rev. 1962 by G. C. Goswami. On page 199, note 9, Goswami says: "The O.I.A. dental and cerebral series lost their original sound values and became alveolars, i.e., the point of articulation for the dentals is pushed back and for the cerebrals pushed forward" due to the Tibeto-Burman influence which had this leveling effect. See also P. C. Bhattacharya 1975:242; Southworth 1971:261, and 1974:206, 214-15.

81. Georg Morgenstierne, "Neu-Iranische Sprachen," in *Handbuch der Orientalistik, Iranistik* (Leiden-Köln, 1958), p. 169.

82. Emeneau 1974; K. A. Nilakanta Sastri 1967:48ff.; Srinivas 1966:1-45; Chatterji 1962:82ff.; and 1965:46ff.

83. Skt. *vaṇij* 'merchant' and *paṇya-* 'merchandise' are related to Vedic *paṇi*, the name of a non-Aryan trading tribe.

84. For instance, the *Bhagavad-Gītā* (15.15) mentions Krishna's claim that he is to be known from all the Vedas. Such statements can be found in almost all the Purāṇas. This kind of syncretism has been a hallmark of classical Hinduism.

REFERENCES

Abhyankar, K. V. 1974. *Veda-pada-pāṭha-carcā*. Bhandarkar Oriental Research Institute, Post Graduate and Research Department Series (Poona), no. 10.

———. 1969. "Accents in Sanskrit." *Annals of the Bhandarkar Oriental Research Institute* (Poona) 50.

Acharya, K. C. 1971. "Linguistic Remarks on Some Words in the 1st Kāṇḍa of the Paippalāda Saṁhitā of Atharvaveda." *Proceedings of the First All-India Conference of Linguists* (Poona).

Aitareya-Āraṇyaka. Edited and translated with notes, with parts of the *Śāṅkhāyana-Āraṇyaka*, by A. B. Keith. Oxford University Press, 1909; reprinted in 1969.

Allen, W. S. 1951. *Phonetics in Ancient India*. London Oriental Series, no. 1. London: Oxford University Press.

Ananthanarayana, H. S. 1970. "Prakrits and Dravidian Languages." *Proceedings of the Seminar in Prakrit Studies*. Poona: University of Poona.

Andersen, Henning. 1973. "Abductive and Deductive Change." *Language* 49.

Andronov, M. S. 1970. *Dravidian Languages*. Moscow: Nauka Publishing House.

———. 1963. "Lexico-Statistic Analysis of the Chronology of Disintegration of Proto-Dravidian." *Indo-Iranian Journal* 7.

Āpiśali-śikṣā-sūtrāṇi. Edited by Yudhishthir Mimamsak. Ajmer, Saṁvat 2024.

Bailey, C. J. N., and M. L. Gardens. 1974. "Naturalness in Historical Reconstruction and Changes That Are Not Natural." In *Natural Phonology*. Chicago: Chicago Linguistic Society.

Bailey, Grahame T. 1938. "The Development of English *t, d* in North-Indian Languages." In *Studies in North Indian Languages*. London (originally in *BSOS* 4).

Banerjea, A. C. 1963. *Studies in the Brāhmaṇas*. Delhi: Motilal Banarasidass.

Banerji Shastri, A. 1936-37. "The Nāgas." *Annals of the Bhandarkar Oriental Research Institute*.

Bare, James. 1976. *Phonetics and Phonology in Pāṇini*. Natural Language Studies, no. 21. Ann Arbor: Phonetics Laboratory, University of Michigan.

Bhattacharya, Bishnupada. 1958. *Yāska's Nirukta and the Science of Etymology*. Calcutta.

Bhattacharya, P. C. 1975. "Sino-Tibetan (Boro), Assamese, Bengali and Indic Languages." *Indian Linguistics* 36, no. 4.

Bloch, Jules. 1934, 1965. *Indo-Aryan, From the Vedas to Modern Times.*

French original published in Paris, 1934; revised by the author and translated by Alfred Master, Paris, 1965.

————. 1920, 1970. *The Formation of the Marāṭhī Language.* French original published in Paris, 1920; translated into English by Dev Raj Chanana, Delhi, 1970.

Bloomfield, Maurice. 1906. *Vedic Concordance.* Cambridge: Harvard University Press.

Bloomfield, Maurice, and Franklin Edgerton. 1932. *Vedic Variants*, vol. 2. Philadelphia.

Brough, John. 1962. *The Gāndhārī Dharmapada.* London Oriental Series 7. London: Oxford University Press.

————. 1953. *The Early Brahmanical System of Gotra and Pravara.* Cambridge: Cambridge University Press.

Brown, Norman. 1953. *The United States and India and Pakistan.* Cambridge: Harvard University Press.

Bühler, Georg. 1895. *On the Origin of the Indian Brāhma Alphabet.* London.

Burrow, Thomas. 1936. "The Dialectal Position of the Niya Prakrit." In *Indian and Iranian Studies*, presented to George A. Grierson. London: University of London.

————. 1955. *The Sanskrit Language.* London: Faber and Faber.

————. 1968. *Collected Papers on Dravidian Linguistics.* Department of Linguistics publication no. 13, Annamalai University, Annamalainagar, South India.

————. 1971. "Spontaneous Cerebrals in Sanskrit." *BSOAS* 34.

————. 1972. "A Reconsideration of Fortunatov's Law." *BSOAS* 35.

Burrow, Thomas, and M. B. Emeneau. 1961. *A Dravidian Etymological Dictionary.* Oxford University Press.

Chakladar, H. C. 1928. "Eastern India and Āryāvarta." *IHQ* 4, no. 1. (Also refer to the posthumous publication: "Aryan Occupation of Eastern India." *Indian Studies, Past and Present* 3. Calcutta, 1961-62.)

Chanda, Ramaprasad. 1916. *The Indo-Aryan Races.* Bengal: Rajshahi; reprinted in *Indian Studies, Past and Present*, Calcutta, 1969.

Chatterji, S. K. 1965. *Dravidian.* Annamalainagar: Annamalai University.

————. 1962. *Indianism and the Indian Synthesis.* Calcutta: University of Calcutta.

————. 1960. *Indo-Aryan and Hindi.* Calcutta: Firma K. L. Mukhopadhyaya.

————. 1960a. "The Pronunciation of Sanskrit." *Indian Linguistics* 21.

————. 1956. "Old Tamil, Ancient Tamil and Primitive Dravidian." *Tamil Culture* 5, no. 2.

————. 1951. "Race-Movements and Pre-historic Culture." In *The Vedic Age.* Bombay: Bhāratīya Vidyā Bhavana.

————. 1936. "Purāṇa Legends and the Prakrit Tradition in New Indo-Aryan." In *Indian and Iranian Studies*, presented to George A. Grierson. London: University of London.

Chattopadhyaya, K. C. 1974. "Did Pāṇini Envisage "A" as a Close Vowel?" *Charudeva Shastri Felicitation Volume.* Delhi, 1974.

Converse, H. S. 1974. "The Agnicayana Rite: Indigenous Origin?" *History of Religions* 14, no. 2.

Dandekar, R. N. 1961. *Vedic Bibliography.* Poona: University of Poona.

————. 1967. *Some Aspects of the History of Hinduism.* Poona: University of Poona.

Dani, A. H. 1963. *Indian Paleography.* Oxford: Oxford University Press.

Dasgupta, Probal. 1972. "Coronality, Old Indo-Aryan Palatals, and Natva." *Indian Linguistics* 33, no. 2.

Deb, H. K. 1925. "Rājaśekhara on Śiśunāga." *JAOS* 45.

————. 1922. "India and Elam." *JAOS* 42.

Deshpande, Madhav. 1978a. "History, Change and Permanence: A Classical Indian Perspective." To appear in *Contributions to South Asian Studies*, no. 1. Oxford University Press (1978?).

————. 1978b. *Socio-Linguistic Attitudes in India: An Historical Reconstruction.* A monograph to be published by Karoma Publishers, Ann Arbor, Michigan (1978?).

————. 1978c. "Some Aspects of Prehistoric Indo-Aryan." To appear in *Annals of the Bhandarkar Oriental Research Institute*, (Poona), Diamond Jubilee Volume (1978?).

————. Forthcoming. "Rājaśekhara on the Ethnic and Linguistic Geography of India." Paper presented at the 1978 Meeting of the American Oriental Society in Toronto.

————. Forthcoming. "Nation and Region: A Socio-Linguistic Perspective on Maharashtra." Paper presented at the conference *National Unity: The South Asian Experience*, organized by the University of Toronto, March 1978.

————. Forthcoming. *Aryans, Non-Aryans and Brahmins: A Study in Socio-Linguistic History.* In preparation.

————. 1976. "On the *Ṛk-Prātiśākhya* 13.5-6." *Indian Linguistics* 37.

————. 1975a. "Phonetics of *V* in Pāṇini." *Annals of the Bhandarkar Oriental Research Institute* 56.

————. 1975b. *Critical Studies in Indian Grammarians, I, The Theory of*

Homogeneity. The Michigan Series in South and Southeast Asian Languages and Linguistics, no. 2. Ann Arbor: Center for South and Southeast Asian Studies, The University of Michigan.

——. 1975c. "Phonetics of Short *A* in Sanskrit." *Indo-Iranian Journal* 17.

Ebert, R. P. 1976. Introduction to *Diachronic Syntax.* Chicago Linguistic Society.

Edgerton, Franklin. 1936. "The Prakrit Underlying Buddhistic Hybrid Sanskrit." In *Indian and Iranian Studies,* presented to George Grierson. London: University of London.

Emeneau, M. B. 1954. "Linguistic Prehistory of India." *Proceedings of the American Philosophical Society* 98.

——. 1956. "India as a Linguistic Area." *Language* 32.

——. 1962a. "Bilingualism and Structural Borrowing." *Proceedings of the American Philosophical Society* (Philadelphia) 106, no. 4.

——. 1962b. *Brahui and Dravidian Comparative Grammar.* Berkeley: University of California.

——. 1967. *Collected Papers (On Dravidian Linguistics, Ethnology and Folktales).* Annamalainagar: Annamalai University.

——. 1971. "Dravidian and Indo-Aryan: The Indian Linguistic Area." *Symposium on Dravidian Civilization.* Austin, Texas.

——. 1974. "Indian Linguistic Area Revisited." *International Journal of Dravidian Linguistics* 3, no. 1.

Emeneau, M. B., and Thomas Burrow. 1962. *Dravidian Borrowings from Indo-Aryan.* Berkeley and Los Angeles: University of California Press.

Esteller, A. 1969. "The Quest for the Original Ṛgveda." *Annals of the Bhandarkar Oriental Research Institute* 50.

——. 1968. "Problems in the Text-Critical Reconstruction of the Ṛgveda-Palimpsest." *Annals of the Bhandarkar Oriental Research Institute* 48-49.

Fortunatov, Ph. 1881. "L + Dental im Altindischen." *Beiträge zur Kunde der Indo-Germanischen Sprachen* (Göttingen) 6.

Ganeshan, S. N. 1971. "Phonological Pattern of Tamil and Homonymy Due to Loanwords from Sanskrit." *Proceedings of the First All-India Conference of Linguists* (Poona).

Ganeshsundaram, P. C., and S. Vaidyanathan. 1958. "An Evaluation of Sanskrit Loan-words in Tamil from the Point of View of Nannūl." *Indian Linguistics* 1.

Geiger, W., and E. Kuhn. 1895-1901. *Grundriss der Iranischen Philologie* (Strassburg) 1.

Ghatage, A. M. 1962. *Historical Linguistics and Indo-Aryan Languages.*

Bombay: University of Bombay.

——. 1941. *Introduction to Ardhamagādhī.* Kolhapur.

Ghosh, Batakrishna. 1951. "Vedic Literature—General View." In *The Vedic Age.* Bombay: Bhāratīya Vidyā Bhavana.

Grierson, George Abraham. 1931. "On the Modern Indo-Aryan Vernaculars." *Indian Antiquary.*

——. 1929. "The Language of the Mahānayaprakāśa." *Memoirs of the Asiatic Society of Bengal* (Calcutta) 11, no. 2.

——. 1906. *The Piśāca Languages of North Western India.* London.

Hamp, Eric P. 1976. "Why Syntax Needs Phonology." In *Papers from the Parasession on Diachronic Syntax.* Chicago: Chicago Linguistic Society.

Hart, George L. 1975. *The Poems of Ancient Tamil.* Berkeley: University of California Press.

Hock, Hans Henrich. 1975. "Substratum Influence on (Ṛgvedic) Sanskrit?" *Studies in the Linguistic Sciences* 5, no. 2. Urbana: University of Illinois.

Hoffmann, Karl. 1960. "Review of Wackernagel's *Altindische Grammatik.*" *ZDMG* 110.

Hoijer, Harry. 1948. "Linguistic and Cultural Change." *Language* 24, no. 4.

Hymes, Dell, ed. 1971. *Pidginization and Creolization of Languages.* London: Cambridge University Press.

——, ed. 1964. *Language in Culture and Society.* New York: Harper and Row.

Ivanov, V. V., and V. N. Toporov. 1968. *Sanskrit.* Moscow: Nauka Publishing House.

Kantor, R. N., and R. J. Jeffers. 1976. "A History of the Sanskrit Gerund" (abstract). *Meeting Handbook,* Linguistic Society of America, 51st Annual Meeting, Philadelphia, 1976.

Kāśikā-Vṛtti. By Vāmana and Jayāditya. Sanskrit Academy Series, nos. 17 and 20. Hyderabad: Osmania University.

Katre, S. M. 1944. *Some Problems of Historical Linguistics in Indo-Aryan.* Bombay: University of Bombay. Reprinted by Deccan College, Poona, 1965.

Keith, A. B. See *Aitareya-Āraṇyaka.*

Kimura, Ryukan. 1927. *A Historical Study of the Terms Hīnayāna and Mahāyāna, and the Origins of Mahāyāna Buddhism.* Calcutta: University of Calcutta.

Konow, Sten. 1936. "Note on the Ancient North-Western Prakrit." In *Indian and Iranian Studies,* presented to George Grierson. London: University of London.

———. 1929. *Kharoṣṭhī Inscriptions.* Corpus Inscriptionum Indicarum (Calcutta) 2, pt. 1.

Kosambi, D. D. 1965. *Ancient India.* New York: Meridian.

———. 1950. "On the Origin of the Brahmin Gotras." *JBBRAS* 26.

———. 1947. "Early Brahmins and Brahmanism." *JBBRAS* 23.

Kuiper, F. B. J. 1948. *Proto-Munda Words in Sanskrit.* Amsterdam.

———. 1955. "Ṛgvedic Loanwords." In *Festschrift für W. Kirfel,* Studia Indologica, Bonner Orientalistische Studien, Neue Serie, Band 3.

———. 1958. "Ṛgvedic *Kirín-* and *Kṝḷ-.*" *Indian Linguistics* 1.

———. 1965. "Consonant Variation in Munda." In *Indo-Pacific Studies,* pt. 1, edited by Milner-Henderson. Amsterdam.

———. 1967a. "The Sanskrit Nominative Singular *Víṭ.*" *Indo-Iranian Journal* 10.

———. 1967. "The Genesis of a Linguistic Area." *Indo-Iranian Journal* 10: 81-102; reprinted in Southworth and Apte.

Lovins, J. B. 1974. "Why Loan Phonology is Natural Phonology?" In *Natural Phonology.* Chicago: Chicago Linguistic Society.

Macdonell, A. A. 1916. *A Vedic Grammar for Students.* Oxford University Press; reprinted in 1971.

Mahadevan, Iravatham. 1970. *"Tamil-Brāhmī Inscriptions."* Madras: State Department of Archaeology, Government of Tamilnadu.

———. 1968. "Tamil-Brāhmī Inscriptions of the Sangam Age." *Second International Conference–Seminar of Tamil Studies* (Madras).

Martinet, André. 1966. *Elements of General Linguistics.* Chicago: University of Chicago Press.

Master, Alfred. 1964. *A Grammar of Old Marāṭhī.* Oxford University Press.

———. 1960. "Initial Cerebrals in Indo-Aryan." In *P. K. Gode Commemorial Volume.* Poona: Oriental Book Agency.

MB, *Vyākaraṇa-Mahābhāṣya,* by Patañjali, with commentaries by Kaiyaṭa and Nāgeśa. In three volumes. Delhi: Motilal Banarasidass, 1967.

Mehendale, M. A. 1975. "The Ṛgveda-Saṃhitākāra and Father Esteller." *Bulletin of the Deccan College Research Institute* 35, nos. 1-2.

———. 1968. *Some Aspects of Indo-Aryan Linguistics.* Bombay: University of Bombay.

———. 1965. "The Use of *ḷ* in the Speech of Yāska." In *Nirukta Notes.* Poona: Deccan College.

———. 1963. "Upaniṣadic Etymologies." In *Munshi Felicitation Volume.* Bombay: Bhāratīya Vidyā Bhavana.

———. 1948. *Historical Grammar of Inscriptional Prakrits.* Poona: Deccan College.

Meillet, Antoine. 1912-13. "Les Consonnes intervocaliques en Védique." *Indogermanische Forschungen* 31.

Miranda, Rocky V. 1977. "The Assimilation of Dravidian Loans to Konkani Phonological and Morphological Patterns." *Indo-Iranian Journal* 19, nos. 3-4.

Nadkarni, Mangesh V. 1975. "Bilingualism and Syntactic Change in Konkani." *Language* 51.

NR, *Nirukta,* by Yāska, with a commentary by Durgācārya. Ānandāśrama Sanskrit Series (Poona), no. 88, pts. 1-2, 1921.

Oldenberg, Hermann. 1896, 1973. *Vedic Research.* Original German published in *ZDMG* 50, 1896; translated by V. G. Paranjpe, Poona, 1973.

———. 1890, 1962. *Ancient India, Its Language and Religions.* Originally published in *Deutsche Randschau,* Berlin, 1890; Indian English edition, Calcutta, 1962.

———. 1890, 1882. *Buddha; His Life, His Doctrine, His Order.* Original German published in Berlin, 1890; English translation by Hoey (London, 1882).

Panikkar, K. M. 1961. *Hindu Society at Cross Roads.* Bombay: Asia Publishing House, 1955; 3rd rev. ed., 1961.

Pāṇinīya-Śikṣā. Critically edited in all its five recensions, with introduction, translation, and notes, by Manmohan Ghosh. Calcutta: University of Calcutta, 1938.

Parpola, Asko. 1975. "Tasks, Methods and Results in the Study of the Indus Script." *JRAS.*

Rahurkar, V. G. 1974. "Who Were the Paṇis?" *CASS Studies,* no. 2. Poona: University of Poona.

Rakshit, H. K. 1966. "The Brahmans of India, An Anthropometric Study." *Man in India* 46.

Rao, G. Subba. 1954. *Indian Words in English.* Oxford University Press.

Rao, S. R. 1972-73. "The Indus People Begin to Speak." *Journal of the Andhra Historical Research Society* 33.

Rastogi, Moti Lal. 1957. "Śaunaka and Abhinihita Sandhi in Ṛgveda." *Indian Linguistics,* Bagchi Memorial Volume.

RPR, *Ṛk-Prātiśākhya,* pt. 1. Edited by M. D. Sastri. Banaras, 1959.

RT, *Ṛktantra.* Ascribed to Śākaṭāyana, edited by Surya Kanta. Lahore, 1939; reprinted in Delhi, 1971.

Sāṅkhāyana-Āraṇyaka. See *Aitareya-Āraṇyaka.*

Sastri, Nilakanta K. A. 1967. *Cultural Contacts between Aryans and Dravi-*

dians. Bombay: P. C. Manaktala and Sons.

Sastri, Subramanya P. S. 1934. *History of Grammatical Theories in Tamil.* Madras.

———. 1930. *Tolkāppiyam*, vol. 1. English translation, Madras.

SCA, Śaunakīyā Caturādhyāyikā. Edited and translated by W. D. Whitney. New Haven, 1862.

Schwarzchild, L. A. 1973. "Initial Retroflex Consonants in Middle Indo-Aryan." *JAOS*, 93, no. 4.

Sharma, U. C. 1973. "The Dāśarājña War." *CASS Studies*, no. 1. Poona: University of Poona.

Sköld, Hannes. 1926. "Papers on Pāṇini and Indian Grammar in General." *Lunds Universitets Årsskrift* (Leipzig), N. F. Avd. 1, Band 21, N. 8.

Southworth, Franklin C. 1974. "Linguistic Stratigraphy of North India." *International Journal of Dravidian Linguistics* 3, no. 2.

———. 1971. "Detecting Prior Creolization: An Investigation of the Historical Origins of Marāṭhī." In Dell Hymes, ed., 1971.

Southworth, Franklin, and Mahadev Apte. 1974. Introduction to the *International Journal of Dravidian Linguistics* 3, no. 1.

Srinivas, M. N. 1966. *Social Change in Modern India.* Berkeley: University of California Press.

Staal, J. F. 1967. *Word Order in Sanskrit and Universal Grammar.* Foundations of Language (Amsterdam), Supplementary Series, no. 5.

Subbiah, Rama. 1968. "Tolkāppiyam and Phonetics." *Indo-Iranian Journal* 10.

Thieme, Paul. 1955. Review of Burrow's *The Sanskrit Language. Language.*

TPR, Taittirīya-Prātiśākhya. Edited and translated by W. D. Whitney. New Haven, 1868. .

Trautmann, Thomas R. 1974. "Cross-Cousin Marriage in Ancient North India?" In *Kinship and History in South Asia*, Michigan Papers on South and Southeast Asia, no. 7. Ann Arbor: Center for South and Southeast Asian Studies, The University of Michigan.

Turner, R. L. 1975. *Collected Papers.* London: Oxford University Press.

———. 1924. "Cerebralization in Sindhi." *JRAS* 3.

Vaidya, C. V. 1930. *History of Sanskrit Literature.* Poona.

Vaidyanathan, S. 1971. *Indo-Aryan Loan-words in Old Tamil.* Madras.

———. 1958. "A Study of the Semantics of Sanskrit Loan-words in Modern Tamil." *Indian Linguistics* 1.

Vedic Variants. See Bloomfield, Maurice, and Franklin Edgerton.

VPR, Vājasaneyi-Prātiśākhya. Edited and translated by Indu Rastogi. Kashi

Sanskrit Series (Banaras), no. 179, 1967.

Walleser, Max. 1927. "Zur Aussprache von Skr. *a.*" *Zeitschrift für Indologie und Iranistik* (Leipzig), Band 5.

Weinreich, Uriel. 1953. *Languages in Contact.* 3rd printing. Mouton, 1964.

Weinreich, Uriel; William Labov; and Maurice Herzog. 1968. *Empirical Foundations for a Theory of Language Change.* Austin: University of Texas Press.

Zvelebil, Kamil. 1972. "The Descent of the Dravidians." *International Journal of Dravidian Linguistics* 1, no. 2.

———. 1970. *Comparative Dravidian Phonology.* The Hague-Paris: Mouton.

Zvelebil, Kamil, and Švarný. 1955. "Remarks on the Articulation of the Cerebral Consonants." *Archiv Orientální* 23, pt. 3.